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Reports from the Annual Meeting, Part II

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CERTIFICATION OF SANITARY INSPECTORS IN CANADA

Annual Examinations, 1937

THE annual examinations for the certificate in sanitary inspection — C.S.I. (C) — granted by the Canadian Public Health Association will be held in certain provincial centres on September 22nd, 23rd, and 24th.

The examinations will extend over the three days and will be practical, oral, and written. One day and a half will be utilized by the candidate in making a report on an assigned local inspection and for the conduct of the oral examination. Three written examinations covering the subjects of the syllabus will occupy the remaining day and a half.

A syllabus outlining the subjects of the examination and the requirements for registration, together with an application form and a list of recommended text and reference books and other publications, may be obtained by addressing Dr. J. T. Phair, Secretary of the Committee on the Certification of Sanitary Inspectors. Copies of the 1935 and 1936 examination papers are also available if desired.

Applications must be received by the Secretary of the Committee on or before Monday, August 23rd.

CANADIAN PUBLIC HEALTH ASSOCIATION
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The 1936 Epidemic of Poliomyelitis in Manitoba

Control Measures*

F. W. JACKSON, M.D., D.P.H.
Deputy Minister of Health and Public Welfare, Province of Manitoba

DURING the latter part of June, poliomyelitis made its appearance in the municipality of Morton, which is located in the southwestern part of the province. As secondary cases occurred in Morton and at other points in the province, it became apparent that the disease would likely reach epidemic proportions. During the latter part of July the Department of Health and Public Welfare appointed an assistant epidemiologist and stationed him at Boissevain, which is situated in the centre of the area in which the disease first appeared. He was given charge of the public health aspects of the situation, with power to insist on rigid observance of quarantine regulations. He also acted as consultant to the local practising physicians. The situation, however, became progressively worse. The death rate and the number of cases showing residual paralysis continued to be far too high.

Provision of Medical Care for Every Person

A detailed study, in the field, revealed that far too many people delayed calling a physician until the onset of paralysis. It was not that medical aid was not available, but that the people in this particular district, which is a part of the "dried-out" area, would not call a doctor because they did not have the money to pay for his services. It was very apparent that something had to be done to insure that everyone in the district who became ill had medical atten-

**Presented before a general session of the Canadian Public Health Association and the Ontario Health Officers Association, Ottawa, June 17, 1937.*

tion at the earliest possible moment. The municipal authorities, therefore, were approached. The situation was explained fully to them and they were urged to make diagnostic and treatment facilities available to every resident of the municipality without charge to the individual, the municipality assuming the payment of the doctors' fees.

This they agreed to do, and the following resolution was passed by the Council and advertised in the local newspapers and over the telephone system:

"On and after this date any resident of this municipality who believes he or any member of his household may be developing infantile paralysis, the symptoms of which are upset stomach, headache, fever, rapid pulse, and stiffness in the neck or back, has the right to call his own doctor at the expense of the municipality to make a visit to decide what the illness is. If it should be infantile paralysis, the municipality will also be responsible for the cost of any further medical attention required."

The physicians in the district agreed to accept a special scale of fees, which was about two-thirds of the regular charges. It is significant that in the Morton area, although some twenty cases were reported subsequent to this arrangement, no further deaths or cases with residual paralysis occurred.

Concurrently, an intensive program of education, through house-to-house visitation by members of the provincial public health nursing staff, was inaugurated. The nurses urged parents to call a doctor quickly in case of sickness, and also gave instruction on the use of the picric-acid nasal spray.

A detailed survey of premises on which cases of the disease occurred was also instituted, and although some fifty premises were carefully investigated, no common factors were found.

As the disease spread to other municipalities, the municipal authorities of each district were approached and similar arrangements were made for the provision of free diagnosis and treatment. In no instance was there a refusal; and when the disease became widespread, a circular letter to the municipalities was successful in obtaining practically complete co-operation. Such municipal action made possible the early diagnosis of the disease and prompt treatment.

Early in the course of the epidemic we found that, in making a diagnosis, dependence on "spinal-fluid findings" frequently led to disastrous results. The symptoms which we considered necessary in a clinical diagnosis were: a temperature of 99 to 103°F.; increased pulse rate, usually more rapid than the temperature warranted; gastric upset, often with vomiting; and headache. When there were cases of poliomyelitis in the district, these symptoms, together with signs of stiffness in the neck or back, justified, in our opinion, a diagnosis of poliomyelitis and the immediate administration of immune serum.

In order that the Provincial Department of Health and Public Welfare might be of assistance to the physicians, as well as to the public, the province was divided into three areas and a special investigator placed in each. His duties were to act as a clinical consultant, to investigate and complete special report forms on all cases occurring in his area, and to assist in enforcing the isolation and quarantine regulations. Further, he was to ensure that adequate supplies of immune serum were readily available.

USE OF IMMUNE SERUM

It was our conviction that if the serum was to be of value it must be given at the earliest possible moment, preferably within thirty-six hours of the onset of the initial symptoms. Absolute rest in bed was advised for at least ten days to two weeks following the disappearance of all symptoms.

Granted that there is a great difference of opinion in regard to the value of immune serum in the early treatment of poliomyelitis, we felt that, as there is no danger from its administration when given intramuscularly, it should be administered. In this we now feel fully justified since all our evidence, both clinical and statistical, points to the fact that immune serum really is of value. I do not believe that there is a physician in Manitoba who used the serum last fall but will testify to the definite clinical improvement following its use, many claiming that the results obtained are quite comparable to those secured when diphtheria antitoxin is given in a case of diphtheria.

The serum used in Manitoba was prepared at our own laboratory under the direction of Dr. F. T. Cadham, Provincial Bacteriologist. The serum was collected fom selected, fasting donors and pooled, being prepared in the usual way with the exception that it was not filtered. At no time during the course of the epidemic was there a shortage of serum. Approximately 1,000 vials were prepared and distributed. The serum was given intramuscularly, in doses of 20 cc.

TABLE I

OUTCOME OF CASES RECEIVING SERUM BEFORE ONSET OF PARALYSIS

	Serum Administered before Paralysis					
	within 36 hrs.	37-48 hours	49-72 hours	3-4 days	Over 4 days	Total
Total treated prior to paralysis..	262	53	30	24	26	395
Recovered without paralysis (%)	92.7	83.1	73.4	71.0	61.5	86.1
Recovered with residual paralysis (%).....	5.5	11.4	20.0	12.5	26.9	9.3
Fatal cases (%).....	1.8	5.5	6.6	16.5	11.6	4.6

One is impressed by the findings in table I, indicating that the interval of time elapsing before the administration of serum bears a definite relationship to the percentage of cases making complete recovery. As the interval is lengthened, the percentage of cases with residual paralysis and the percentage of fatal cases increase.

TABLE II

OUTCOME OF CASES RECEIVING NO SERUM OR SERUM AFTER ONSET OF PARALYSIS

	Cases
Recovered without paralysis.....	43 (36.1 %)
Recovered with residual paralysis.....	62 (52.1 %)
Died.....	14 (11.8 %)
Total.....	119

The percentage of cases recovering without paralysis (table I), where serum was given within thirty-six hours, was 92.7, while in table II, where serum was administered late or not given, the percentage is only 36.1. Similar results are found when we compare the cases with residual paralysis and the fatal cases. These findings are, of course, subject to the criticism that, in view of the limitations of diagnosis of early cases, not all the cases included were actual cases of poliomyelitis.

TABLE III

END RESULTS OF 131 CASES WITH POSITIVE SPINAL-FLUID FINDINGS

	Serum administered within 36 hours of onset	Serum after 36 hours; or after paralysis; or not administered
Result	Cases	Cases
Recovered without paralysis	51 (92.7%)	43 (56.6%)
Recovered with residual paralysis	3 (5.5%)	28 (36.8%)
Died	1 (1.8%)	5 (6.6%)
Total	55 (100%)	76 (100%)

It is of interest to note, in table III, that in the 51 cases which received serum within thirty-six hours of onset and in which the diagnosis was confirmed by positive spinal-fluid findings, the percentage of recoveries without paralysis was the same as the percentage of recoveries in the whole group of 262 who received serum within thirty-six hours (table I).

If it were true that the serum is of no value, as some claim, one would expect to find just as many deaths and equally as many cases with residual paralysis in the group receiving serum within thirty-six hours of the onset of symptoms as in those treated afterwards. There is nothing to support this assumption from the findings presented.

TABLE IV

FATAL CASES AND CASES WITH RESIDUAL PARALYSIS IN RELATION TO TIME OF ADMINISTRATION OF SERUM

	Number	Serum administered within 36 hours of onset	Serum after 36 hours; or after paralysis; or not administered
Fatal cases	33	8 (24.3%)	25 (75.7%)
Cases with residual paralysis	102	17 (16.6%)	85 (83.4%)

The importance of the time factor in administering serum is evidenced by the results presented in table IV. Of the 33 cases which ended fatally and the 102 cases with residual paralysis, the greatest number occurred in the groups in which serum was not administered until after thirty-six hours from the onset of symptoms.

All our investigators and many of the practitioners remarked that the clinical recovery following the use of serum was most pronounced in the younger age-groups, such recovery being, in many instances, nothing less than miraculous. These results are presented in table V.

TABLE V

RESULTS WHEN SERUM WAS ADMINISTERED WITHIN 36 HOURS, BY CERTAIN AGE-GROUPS

Age-groups	Cases	Deaths	Case fatality rate	Residual paralysis	Percentage residual paralysis
0-14	203	3	1.5	11	5.4%
15 and over	59	5	8.5	6	10.2%

It is our belief that the findings suggest that the dose of serum should be at least 25 cc. in the age-group 14 years and under, and 50 cc. in age-groups over 14 years. Further, we believe that it is advisable that the dose of serum be repeated in twelve hours if there is no improvement in clinical symptoms.

PROVISION FOR AFTER-CARE

After the epidemic subsided, the Department tried to gather information concerning the number and types of cases with residual paralysis by a questionnaire to municipal health officers. The Department then engaged Dr. Angus A. Murray, a competent orthopaedic sugeon, to see all the cases with residual paralysis, at the physician's request, and to outline the required treatment to minimize deformities. This service, which was much appreciated by both the public and the profession, resulted in the best possible remedial treatment being given. In nearly all instances where the family was not able to supply the treatment and appliances required, the municipal authorities or private agencies met the need.

Nothing but the highest praise and appreciation can be expressed for the way in which the municipal authorities and the practising profession co-operated in the efforts to limit the disaster of this epidemic, and the at least moderately satisfactory end results shown in table VI are due to this co-operation. A survey which is now being conducted indicates a still more satisfactory result.

TABLE VI

END RESULTS OF 539 CASES

Complete recovery		404
Residual paralysis of one muscle group	21	
Residual paralysis of more than one muscle group	33	
Residual paralysis of one or more extremities	48	
		— 102
Deaths		33
		539

Reports from approximately half of the 102 cases reported in table VI as having residual paralysis indicate that probably 22 will be completely recovered in so far as disability is concerned and that not more than 40 will have a major disability.

SUMMARY

In considering the epidemic of 1936 and our previous experience with poliomyelitis in Manitoba, we would summarize our findings as follows:

As the State ultimately may have to support most of those permanently

and totally disabled by poliomyelitis, it is in the interest of the State that it should make provision for:

1. Early and adequate diagnostic and treatment facilities.
2. An adequate supply of immune serum readily available to every practising physician.
3. Consultant diagnostic service for cases of residual paralysis.
4. Corrective treatment and appliances for indigent persons.

Epidemiological Features*

C. R. DONOVAN, M.D., C.M., D.P.H.
Epidemiologist, Department of Health and Public Welfare
Province of Manitoba

EPIDEMIC poliomyelitis in Canada in 1936 was concentrated largely in the province of Manitoba, where 539 cases were reported, representing a case rate of 75.7 per 100,000 of the population. The other provinces having more than 25 cases were Ontario with 208, Quebec with 116, and Saskatchewan with 77 cases.

The occurrence of poliomyelitis in Manitoba during the past ten years is shown in table I. During the years intervening between 1928 and 1936 a few cases were reported every year, but that these represent the extent of the

TABLE I

CASES AND DEATHS OF POLIOMYELITIS
MANITOBA, 1927 TO 1936

Year	Population	Cases	Deaths	Case Fatality Rate	Deaths per 100,000 Pop.
1927	651,272	6	4	66	.62
1928	663,488	434	49	11	7.4
1929	675,704	55	11	20	1.63
1930	687,920	45	6	13	.88
1931	700,139	15	2	13	.28
1932	702,322	7	2	28	.28
1933	704,505	8	3	37	.42
1934	706,688	10	1	10	.14
1935	708,871	23	7	30	.99
1936	711,056	539	33*	6.1	4.2

*Deaths occurring during 1936 among the 539 cases reported during that period.

disease in each year might be questioned when the figures in the case-fatality column are examined. In 1935, for example, the case-fatality rate is shown as approximately 30, which is several times that of the epidemic years of 1928 and 1936. Excluding the 7 fatal cases in 1935, the investigation of the remaining 16 cases reveals that 13 of them were definitely paralyzed, one had a stiff back

*Presented before the Section of Vital Statistics and Epidemiology at the Twenty-sixth Annual Meeting of the Canadian Public Health Association, Ottawa, June 18, 1937.

for several weeks, one had no paralysis but had other clinical signs of the disease, and in one the diagnosis was doubtful. In addition to these reported cases, we learned of many persons who had all the clinical symptoms of the disease, except paralysis, and who were considered as suspects by their physicians, but were not reported. It has frequently been pointed out that the case-fatality rates during epidemic years are much lower than at other times. It seems reasonable, however, to believe that these high case-fatality figures do not necessarily indicate the presence of the disease in an especially virulent form, since many cases are unrecognized and unreported when the disease is not epidemic.

Occurrence of Cases

In the 1936 epidemic the first case was reported on April 29th from Ochre River and terminated fatally in about four days. No further reports were received until June 22nd, when the second and third cases occurred at rather widely separated points: one in Grey municipality who developed residual paralysis, and one in Morton municipality, who also developed extensive paralysis. From this time on, cases occurred continuously in the municipality of Morton and its principal town, Boissevain.

The first case in this locality was a half-breed Indian boy, about sixteen years old, who lived about eight miles south of Boissevain with his mother and two younger children. He took part in no social activities of the neighbourhood and there was no history of close personal contact with his neighbours. The onset of his symptoms was believed to be on June 18th. On this, or the following day, the history revealed that two neighbours had contact with this boy, and four or five days later, about June 22nd, their nineteen-year-old son developed headache, temperature, vomiting, progressing to paralysis and death on June 27th. On the first day of this boy's illness, his sister, a school teacher, was at home visiting and about five days later she developed symptoms which were diagnosed as poliomyelitis. She had weakness of the lower extremities for some weeks, but eventually recovered.

Following these three cases others occurred in rapid succession in the Morton area, until by August 9th, 36 cases had been reported, equivalent to 1 per cent. of the population, with only seven from other parts of the province, none of which were within a radius of fifty miles. However, after this date there was a definite increase in reports of the disease from other parts of the province, and the general direction of spread was toward the north and northeast. This corresponds to the general travel habits of the population, which are north toward Brandon and northeast toward Winnipeg. The reported cases occurred chiefly along the main highways and were practically all in the south-central part of the province. Closely grouped cases were seen in some sections, indicating the explosive nature of the outbreak, as in the municipality of Elton, where 16 cases occurred between September 21st and October 5th. It was also reported during the same period that about half the school children in that district had headache, fever, nausea or sore throat for from twenty-four to forty-eight hours. Similar reports were received from other parts of the

province. In contrast, other districts showed an accumulation of cases over a period of several weeks. This was most evident in the larger urban centres.

Thirty-six municipalities reported either one or two cases, but only in a very few could any definite history of contact be obtained. In all, 83 of the 175 municipalities reported cases.

After the first case on April 29th, intervals of several days elapsed between cases, until July 29th, and from that time until the first week in November, cases occurred every day. The full force of the outbreak was not felt until September 7th, and from that date there was a rapid increase in the number of cases, until the peak was reached on September 25th. The week ending September 28th had the greatest number of reported cases. The trend downwards from this point covered a period of almost three months, until December 16th, when the last case of the year was reported. Such a seasonal curve, as shown in figure I, is fairly consistent in this climate, but farther south the peak of the epidemics is reached somewhat earlier in the year.

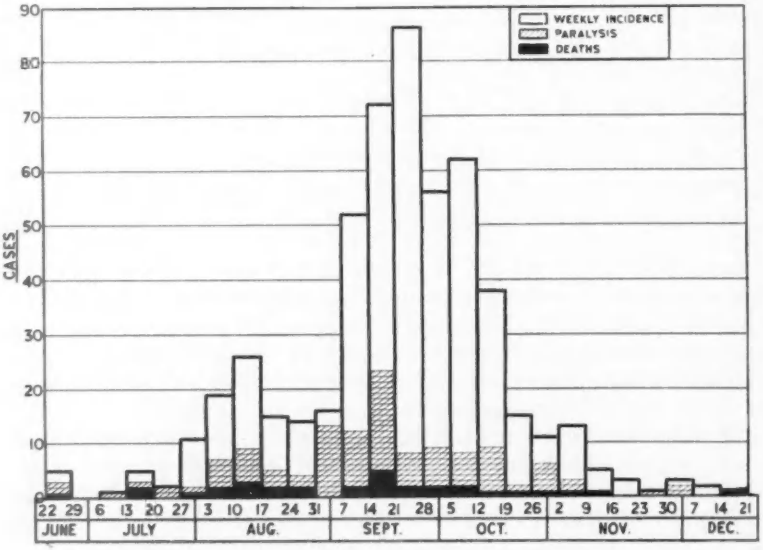

FIGURE I

POLIOMYELITIS, MANITOBA, 1936

Weekly incidence of 538 cases as at April 5, 1937
(April case and death not included)

The 539 cases reported represent a relatively high incidence of the disease, 75.7 per 100,000, as compared with some recent epidemics in the United States (Virginia, 1935, 28 per 100,000; North Carolina, 1935, 21.3 per 100,000), but not nearly so great as the epidemic in Denmark in 1934, with a rate of 124.9 per 100,000. In like manner, some districts in Manitoba fared worse than

others. Most striking is the comparison between Winnipeg, the largest urban centre, and the rural areas such as the Morton-Boissevain district. The 82 cases in Winnipeg represent a case rate of 38 per 100,000 of the population, while the 61 cases in the Morton-Boissevain area constitute a rate of approximately 2,000 per 100,000. The opportunities for the development of immunity in the individuals of these communities may explain to some extent the difference in incidence, Winnipeg having had 233 cases in 1928 while no case of the disease had been reported in the Morton area for at least twenty years. Although these are extreme case rates in urban and rural sections, the rural areas suffered from the disease to a much greater extent than did the urban centres, 351 cases in rural Manitoba representing 90 cases per 100,000 of the population as compared with 188 urban cases representing an attack rate of 58.3.

Age Distribution, Morbidity and Mortality

Not only were there more cases in the rural areas but the percentage of cases in the late teen-age group was considerably greater. This disparity of the age distribution is most noticeable in the data as relating to Winnipeg and Morton and has no doubt been influenced by past experience with the disease (table II). In Winnipeg the two youngest age-groups accounted for about 68 per cent. of the cases while in Morton only 31 per cent. occurred in this age-group; in fact, 50 per cent. of the cases in Morton were over fourteen years of age. The figures from a number of fairly recent epidemics seem to show a tendency for the percentage of the cases in the age-groups below five years to decrease; this is so with the last two outbreaks in Manitoba, as seen in the same table.

TABLE II

AGE GROUPING OF CASES IN VARIOUS AREAS
1936 and 1928

Age	1936								1928			
	Whole Province		Winnipeg		Morton & Boissevain		Rest of Province		Whole Province		Winnipeg	
	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%	Cases	%
0– 4	85	15.5	18	19.5	5	8.2	62	15.4	130	30.5	76	32.6
5– 9	208	38.4	40	48.8	14	22.9	156	39.4	151	35.4	82	35.2
10–14	120	22.3	17	20.7	11	18.0	92	23.2	77	18.1	40	17.2
15–19	71	13.2	4	4.9	18	29.5	49	12.3	43	10.1	22	9.5
20–24	26	4.8	2	2.4	4	6.5	20	5.0	12	2.8	8	3.4
25 and over	29	5.3	3	3.7	9	14.7	17	4.2	13	2.1	5	2.1

It is of interest to compare the case rates for various age-groups in the outbreak in Manitoba as a whole with the case rates for the epidemic in Kentucky in 1935. In the age-group under five years the case rate per 100,000 in Manitoba was 151 and in Kentucky 48; in the age-group 5 to 9 years, 280 in Manitoba and 30 in Kentucky; in the age-group 10 to 14 years, 159 in Manitoba and 20 in Kentucky; 15 to 19 years, 89 in Manitoba and 8 in Kentucky; and in the

age-group 20 years and over, 12 in Manitoba and 1 in Kentucky. The case-fatality rates, however, were much higher in the age-groups under 10 years in Kentucky. In the group under 5 years the case-fatality rate was 1.2 in Manitoba in contrast with 14.9 in Kentucky; in the age-group 5 to 9 years, 2.4 in Manitoba as compared with 7.4 in Kentucky; in the age-group 10 to 14 years, 8.3 in Manitoba and 9.2 in Kentucky; 15 to 19 years, 15.5 in Manitoba and 14.3 in Kentucky; and in the age-group 20 years and over, 10.9 in Manitoba and 8.3 in Kentucky. The case-fatality rate in Manitoba in the age-group under 5 years seems to be unusually low, with a rate of 1.2. The most dangerous age to contract poliomyelitis appears to be between 15 and 19 years; at this age the case-fatality rate was also high in Kentucky and similar findings have been recorded in other studies.

The total deaths in Manitoba for 1936 were 33, of which 1 occurred in the age-group under 5 years; 5 in the age-group 5 to 9 years; 10 in the age-group 10 to 14 years; 11 in the age-group 15 to 19 years; and 6 in the age-group 20 years and over. In the rural areas 7.1 per cent. of the reported cases died, while in Winnipeg 3.6 per cent. and in the remainder of the urban sections 4.7 per cent. were fatal.

Sex

As has been commonly observed, cases among males predominate, there having been 291 males and 248 females affected, as shown in table III. This relationship does not exist in all age-groups: under 10 years the cases among males were much more frequent; between the ages of 10 and 14 the cases were equal; and over the age of 14 years there were more cases among females than among males. There was one more death among females than males and residual paralysis was more frequent in females.

TABLE III

POLIOMYELITIS CASES BY SEX AND AGE

Age	Male	Female	Total
0– 4	48	35	83
5– 9	127	83	210
10–14	60	60	120
15–19	34	37	71
20–24	12	14	26
25 and over	10	19	29
Total	291	248	539

Multiple Cases in Homes

The distribution of cases among the 460 homes from which cases were reported is presented in table IV. In 57 homes (12 per cent.) more than one case occurred, accounting for approximately 25 per cent. of the reported cases. In addition, physicians reported numerous instances in which either before or after a visit to a case in the household, a history was given of similar illness among

other members of the family for whom no medical advice had been sought, as the symptoms had subsided quickly.

TABLE IV

HOMES HAVING SINGLE AND MULTIPLE CASES

	1 case	2 cases	3 cases	4 cases	5 cases	Total Homes
Winnipeg.....	68	7	..	..	..	75
Remainder of Province.....	335	36	8	5	1	385
Total.....	403	43	8	5	1	460

Among the homes involved in the urban areas, 8 per cent. had more than one reported case, in contrast to the rural sections, where 15 per cent. had more than one case. It is regretted that the information relating to these contacts is not in sufficient detail to permit of the calculation of comparative attack rates.

From 32 homes considerable information was obtained concerning the date of onset of each case. In these homes 37 initial cases and 46 secondary cases were reported. Of the secondary cases, 2 occurred two days after the initial cases, 7 after three days, 6 after four days, 6 after five days, 4 after six days, 7 after seven days, 6 after eight days, 1 after nine days, 2 after ten days, 1 after eleven days, 1 after fifteen days, 2 after seventeen days, and 1 after twenty-two days, suggesting that possibly the incubation period is usually within eight days. There are numerous other instances not included in these figures which would seem to support such an assumption. On the other hand, investigation of the first 11 cases following the initial case in the Morton area, when the disease was entirely localized, reveals the following information about the sources of contact infection and probable incubation period:

Shortly after the occurrence of the first three cases, which have been mentioned previously, a picnic was held on July 3rd and was attended by five of the next six reported cases. Four days later, on July 7th, one of these developed poliomyelitis, the only known exposure being fourteen days previous with a sister of one of the early cases.

On July 16th another picnic was held, attended by the remaining four of these cases. Between July 18 and 21st all four were diagnosed as suffering from poliomyelitis. The only known contacts were with one another on the day of the last picnic two to five days previous, and with the one case which developed after the first picnic, fifteen to eighteen days previous. Thus one case had contact with the initial case thirty-one days before; one case developed symptoms three days after his playmate had been diagnosed as suffering from poliomyelitis; and two cases could not be found to have any known contact. Only one of these known exposures was with a patient who was definitely ill; the others were with persons who did not become ill for two to four days, or with contacts of patients. If we accept the idea that along with the recognized typical cases there are numerous abortive cases, then it can be pretty well accepted that at the time most of these 46 subsequent cases developed, the

communities in which they occurred were heavily infected with the disease. Thus these cases may not be true secondary cases at all, but part of the general community infection, and their occurrence in this manner only a matter of coincidence.

One hundred and thirty-seven patients were treated in hospital during the epidemic and, so far as we are aware, no nurse or attendant contracted the disease while nursing these cases.

Environment

Concerning the environmental conditions, which might contribute to the spread of the disease, a special survey of the southern part of the province, where most of the early cases occurred, did not yield any pertinent information. Some farmers reported sickness among horses, which was believed to be equine encephalomyelitis, other farmers reported large numbers of their hens dying. Several of the sick hens and serum from an affected horse were examined through the co-operation of the Connaught Laboratories and the Department of Pathology and Bacteriology of the Ontario Research Foundation. The reports from these institutions did not indicate any relationship between the sickness in these animals and poliomyelitis.

Spinal-Fluid Cell Counts in Diagnosis

The diagnosis in most instances was made on the clinical symptoms, and as the majority of the cases were seen by more than one physician, we feel that the number of cases reported did not exaggerate the prevalence.

Diagnosis is not always easy, but given the primary suspicion in the observer's mind, the disease may be diagnosed before the appearance of the paralysis. In the early stage, with systemic symptoms of fever, rapid pulse, headache, drowsiness, irritability, abnormal sweating, retention of urine and, quite frequently, sore throat, there are sufficient grounds to make a tentative diagnosis of poliomyelitis. The abatement of these symptoms may terminate the attack or, after a quiescent period of a few hours or days, the symptoms may return with increased severity and with the addition of meningeal symptoms as evidenced by pain and stiffness in the cervical or lumbar region, alteration of the reflexes or hyperaesthesia. Moderately severe cases in this stage present a picture which is almost typical: flushed cheeks, circumoral pallor and bright, dry eyes. The child is apprehensive, lying quiet and still, objecting to being bothered and seeming to be aware of some impending danger. Some cases presented unusual symptoms such as abdominal pain of such severity that appendicitis had been seriously considered as the cause of illness.

Of 170 patients on whom spinal puncture was made, 39 (practically 22 per cent.) had a count of ten or less, and all but 3 had less than nine cells (table V). Low cell counts therefore do not, in our opinion, preclude the possibility of poliomyelitis and in diagnosis the absence of a largely increased number of cells must not always be interpreted as excluding this disease. Similar low counts have been recorded by other observers and are in contrast with the high counts found in many cases. The patients who had these low cell counts showed a higher percentage of recoveries than did others.

TABLE V
170 SPINAL FLUID CELL COUNTS IN POLIOMYELITIS CASES

Cells	Recovery		Residual Paralysis		Deaths		Totals	
	Cases	%	Cases	%	Cases	%	Cases	%
0– 10.....	32	82.0	6	15.3	1	2.7	39	100
11– 50.....	37	75.5	10	20.0	2	4.5	49	100
51–100.....	20	74.0	6	22.2	1	3.8	27	100
101–200.....	23	71.8	9	28.2	0	0	32	100
Over 200.....	15	65.2	5	21.7	3	13.1	23	100
Total.....	127	74.7	36	21.2	7	4.1	170	100

Outcome of the Cases

Of the 539 cases there were 329 that were reported as having recovered without any demonstrable muscular involvement, leaving 210 who had some degree of paralysis during the course of the disease: 33 of these died and 102 had residual paralysis. When these figures were compiled at the beginning of 1937, the remaining 75 were reported as having recovered in the interval. The muscular involvement in these was not extensive and remained for only a comparatively short time.

The deaths in each group have been mentioned previously. A summary of the cases and deaths by age-groups is presented in table VI. In the age-group under 5 years the percentage of cases with residual paralysis was the highest of any of the groups. The death rate, on the other hand, was the lowest. In the age-groups over 10 years the death rate was markedly higher than in the young age-groups.

TABLE VI
OUTCOME OF 539 CASES OF POLIOMYELITIS ACCORDING TO AGE-GROUPS

Age	Cases	Deaths	Residual Paralysis	Percentage of deaths	Percentage Residual Paralysis
0– 4.....	85	1	22	1.2	25.8
5– 9.....	208	5	34	2.4	16.3
10–14.....	120	10	20	8.3	16.6
15–19.....	71	11	13	15.5	18.3
20 and over.....	55	6	13	10.9	23.6
Total.....	539	33	102	6.1	18.9

SUMMARY

In the 1936 outbreak in Manitoba, 539 cases of anterior poliomyelitis were reported, being the largest recorded outbreak in the province. The attack rate for the entire province was 75.7 per 100,000 of the population, the rate for urban and rural areas being 58.3 and 90, respectively. The case-fatality rate was 6.1, there being 33 deaths recorded. Only one death occurred among 85 cases under the age of 5 years. The highest case-fatality rate was in the 15-19 age-group. One hundred and two cases (18.9 per cent.) were reported as having definite residual paralysis. In 12 per cent. of homes more than one case was reported. Twenty-two per cent. of the spinal-fluid examinations showed cell counts of 10 or less.

Development of Sensitivity to the Proteins of C. Diphtheriae*

A. E. ALLIN AND D. T. FRASER
Department of Hygiene and Preventive Medicine
University of Toronto

BEVERLEY HANNAH
Riverdale Isolation Hospital, Toronto

THIS study was made to determine whether a clinical attack of diphtheria may result in a skin sensitivity to the proteins of *C. diphtheriae*. The following procedure was carried out. On admission to the hospital patients were injected intradermally with 0.1 cc. of undiluted toxoid, and toxoid freshly diluted 1:10 and 1:100 in physiological saline. Readings were made 24 hours later. The same lot of toxoid was similarly injected, undiluted and freshly diluted as above, prior to discharge 20 to 28 days later. Arbitrarily a reaction was considered positive only if an area of redness at least 10 mm. in diameter was present 24 hours following the injection of 0.1 cc. of a 1:10 dilution. Cultures were made and *C. diphtheriae* was isolated from each case and confirmed by carbohydrate utilization and virulence test.

Thirteen cases of diphtheria were followed as indicated in table I. Ten were non-sensitive (non-reactors) on admission when tested on the 3rd to 11th

TABLE I

DEVELOPMENT OF SENSITIVITY TO THE PROTEINS OF *C. Diphtheriae*

	On Admission		On Discharge	
	Non-reactors	Reactors	Non-reactors	Reactors
Cases of diphtheria (13)	10	3	2	8 3
Diphtheria carriers (5)		5		
Control group (scarlet fever) (18)	14	4	11	3 4

day following the onset of the disease. Eight of these 10 had become sensitive (reactors) when the tests were repeated 20 to 28 days later. One additional individual showed no reaction to the 1:10 dilution of toxoid but did react to the undiluted toxoid which had initially produced no response. The tenth member of the series was still non-sensitive to toxoid on the 30th day of onset of the disease. The remaining 3 patients were reactors when initially tested on

*Presented before the Royal Society of Canada, Section V, Subsection of Medical Sciences, Toronto, May 24, 1937.

the 5th, 11th and 14th day of onset of the disease, and were still reactors prior to discharge. Two of these had been originally non-reactors to the 1 : 100 dilution but were positive to this dilution at the time of the retest.

The five diphtheria carriers admitted to the hospital were all reactors. Bacteriological confirmation of the carrier state was made in each instance. Two of this group were retested and showed no evidence of loss of sensitivity. As illustrated in the table, a control group of 18 children suffering from scarlet fever were similarly tested upon admission to hospital and retested 3 weeks later to determine whether the intradermal injections of toxoid had produced sensitization. None had been previously given toxoid. Cultures were made from each patient to ensure that they were not harbouring *C. diphtheriae*. Fourteen of these children were non-reactors on admission; 11 still failed to react 3 weeks later; 3 showed positive reactions upon retest. In these three, the results of the retest suggest that the initial injections of toxoid had sensitized them to diphtheria toxoid. The remaining 4 were reactors on admission and on retest.

SUMMARY

Thirteen cases of diphtheria were studied; 10 of these were non-reactors on admission; 8 became reactors prior to discharge; 5 carriers were all reactors.

Eighteen patients suffering from scarlet fever served as a control group. Four teen of these were non-reactors on admission; 11 were still non-reactors 3 weeks later; the remaining 3 had become reactors.

CONCLUSION

During an attack of clinical diphtheria patients may, and commonly do, become sensitized within a short period of time to the proteins (toxoid) of *C. diphtheriae*.

Mental Tests

A. JEAN BROWN, M.A.
Psychologist, Toronto Psychiatric Hospital

MENTAL tests grew out of the study of individual differences in man. The first clear case on record of the scientific recognition of individual differences in mental abilities, according to Freeman, occurred in connection with the work of the Greenwich Astronomical Observatory in England. In 1795, one of the observers was found to differ from his colleagues in his estimate of the time of transit of a star. Because of this, he was dismissed from the staff. Later it was discovered that there was an error in all observers, and this difference in the amount of error is called the "personal equation". Measurement of individual differences began about 1890, and for ten or fifteen years was tried out in the psychological laboratory. The educational interest in tests began about 1905.

The mental testing movement has developed through the convergence of scientific thought of four countries. We read of the work of Francis Galton in England, of Kraepelin, a German student of Wundt, of Cattell in the United States, and of Alfred Binet in France. These men and others have devised various types of tests which may be grouped as follows: (a) sensory tests, (b) linguistic tests, (c) performance tests, (d) special ability and (e) group tests.

It is probably true to say that the movement in tests is essentially American because psychologists on this continent have consistently promoted the tests, and have carried out the greatest number of detailed investigations.

Let us discuss the tests we use in our clinic with special reference to the revisions of the Binet-Simon test, which is the most widely used.

Classification of Tests:

1. Intelligence:
   - (a) Linguistic: Binet-Simon—
     - Terman Revision, 1916, (1) 3 years to sup. adult level.
     - 1936, (2) 1 year to sup. adult level.
     - Herring Revision—3 years to adult.
     - Kuhlmann Revision—6 months to adult.
   - (b) Performance:
     - Porteus Maze.
     - Healy Pictorial 1 & 2.
     - Healy Form Board A.
     - Stenquist Mechanical Ability.
     - Goddard Form Board.
     - Kohs Block Design.
     - Drever and Collins Tests for the Deaf.

2. Educational Tests: Arithmetic.
   Spelling.
   Reading.
3. Personality: Bernreuter Personality Inventory.
4. General Information: not standardized.

The *Binet-Simon* Test is the most widely used intelligence test in clinical use.

Binet considered attention and adaptation as the two most important factors in general intelligence. His definition of general intelligence emphasized three phases of behaviour:

1. The ability to take and maintain a given mental set.
2. The capacity to make adaptations for the purpose of attaining a desired end; and
3. The power of auto-criticism.

Terman states that "An individual is intelligent in proportion as he is able to carry on abstract thinking." Henmon considers that "Intelligence is intellect plus knowledge" and Woodrow defines intelligence as "an acquiring capacity".

Binet published a series of tests in 1905 now known as the Binet scale. The tests were not grouped, but arranged in order of difficulty. Later, in 1908, a scale was published in which the tests were grouped into age levels. This is the first age-scale. In 1911, a refined scale was completed and several modifications of the Binet scale then appeared, namely the Goddard Revision, introducing the Binet scale into America, and the Kuhlmann Revision, which adapts the scale to lower age levels. The Yerkes-Bridges and Hardwick Point Scales were developed, but soon were surpassed by the Terman Revision of the Binet Scale in 1916. This revision has had a thorough foundation and standardization, which makes it so valuable for clinical use. The data used in the Stanford Revision include 2,060 examinations. All tests before being admitted to the scale were carefully scrutinized as to their validity. The criteria of a test were as follows:

1. A test must show an increase in the percentage of children that pass it from year to year.
2. Tests must be relatively new; that is, tests should not depend on specific school instruction at any given period of a child's life. It should present a new situation (Contrast question, "Who discovered America?", with "Choose the prettier of two pictures").
3. There must be agreement with other judgments of intelligence, as, success at school, success in the world, and by judgments of success by friends and by teachers.
4. A test must correlate with the scale as a whole.
5. A test must be reliable, that is, it must give the same rating when applied at different times. A difference of five points either way is considered reliable. A study in the correlation between first and second tests of an unselected group of children by Terman is 0.90. A similar study was undertaken in our clinic, on problem cases, and it was found that the correlation was 0.88 on 200 cases.

Each age level of the Terman Revision has from six to eight tests, and a

value in terms of months is given for a correct response. The psychologist carries the subject down the scale to the level at which he succeeds on each test—this is called the basal age—and then carries the subject up the scale until he fails on every test at an age level. The final score is the mental age, and it in turn is divided by the chronological age to ascertain the intelligence quotient. The formula used by Terman in giving each of the tests is strictly adhered to. It is the task of the well-trained psychologist to establish rapport before beginning the standardized interview, to keep the subject's effort at its best, and also not to weary him by covering unnecessary age levels, by starting too low in the scale. The classification of intelligence quotients is an arbitrary classification, that is, it is one of definition. The range is from the idiot group up to the genius:

CLASSIFICATION OF INTELLIGENCE QUOTIENTS

Idiot	up to 25
Imbecile	25 — 50
Moron	50 — 70
Borderline	70 — 80
Dull Normal	80 — 90
Normal	90 — 110
Superior	110 — 120
Very Superior	120 — 140
Near Genius	140 — up

Uses and Application of Intelligence Tests

Linguistic Tests are used:

1. To compare child with the norms for mental development and school grading.
2. To determine amount of retardation of the feeble-minded.
3. To determine the intelligence of juvenile court delinquents.
4. To determine capacity of the individual with a view to vocational fitness.
5. To determine intelligence of immigrants.

Performance tests have a special use:

1. To measure the intelligence of the deaf, speech-defective and foreign-born people.
2. To give additional help in sizing up the individual other than by linguistic tests. For instance, it gives qualitative data, such as persistence, degree of distractibility and habits of work.

Four case studies, from the Out-Patient Clinic, will serve to illustrate the application and value of ascertaining the child's mental age. Cases A and B are cases of boys whose ability was beyond what was required of them, while Case C presents a girl whose capacity was limited and from whom too much was expected.

Case A. The problems for which he was brought to the clinic were: (1) backwardness in school and (2) temper outbursts. The teacher reported that he had to be urged constantly, was careless and slow about his work. He had shown no initiative. The psychological test revealed the fact that his mental age was two years in advance of his chronological age and his intelligence quotient was 118, which places him in the superior intelligence group. The recommendation made was that he should be advanced at least one grade. The co-operation of the school principal was gained, and this was done, although for a time the teacher was very dubious of this action. His attention and effort were finally gained and his difficulties in the class-room disappeared. Other problems were allied with these difficulties, and we have followed this case for a period of eleven years. He has now his senior matriculation, and his ambition is to be a psychiatrist.

Case B. He was referred to the clinic because of truancy and lack of interest in school. His psychological test revealed a C.A. of 10 years, M.A. of 14 years, 8 months, and an I.Q. of 136. His truancy proved to be excursions to the library. This lad was promoted and his truancy disappeared.

Case C. This is a girl of twenty-three, who was unhappy at home and was referred to the clinic by the mother, because of childishness and the fact that she could not be depended upon to complete any task unless under supervision. The family history, in short, gives a picture of a highly intellectual family. The father was a clergyman, now dead, and the responsibility of the family fell on an ambitious and unsympathetic mother. One sister graduated from the university in Modern Languages and another was successful in collegiate. Our patient had been changed from school to school hoping for a better performance, but always failing in her grades. The children's attitude towards the patient was one of superiority. She had become the "maid of all work" in the home and resorted to day-dreaming and listlessness. Psychological test revealed an I.Q. of 84, which places her in the dull normal group. Her capacity was much lower than her surroundings demanded of her. She was removed from her own home in an attempt to re-adjust her. A tremendous amount of work has been done on this case in foster homes and in mental hospital. Her future mental health is not assured.

Case D is a case brought recently to clinic by a social worker from the Infants' Home. She is an unmarried mother, who, after returning from hospital, undertook the care of her baby. This girl was taking a great deal of time of the Victorian Order nurse, who came in each day. It was found that she needed constant help and supervision. The psychological test revealed an I.Q. of 52 and mental age of 8 years and 4 months. General information was fair for the illiterate scale. Knowing her limited capacity, it was readily understood that she could never assume responsibility for her baby.

LIMITATIONS OF MENTAL TESTS

There are certain limitations of intelligence tests that should be kept in mind. It is only one aspect of the total personality. A high intelligence quotient does not always predict success. Other personality traits are equally important, but are more difficult to measure. It is a scientific measure, useful when it is interpreted by the examiner in the light of the total picture. We emphasize the interpretation of the test much more than the numerical rating, which is often misunderstood. Tests are more reliable in persons from five years old to about twenty years of age. In very young children a retest is advisable. In adults I.Q.'s are only a guide and are more useful in placing the subject in a group than giving a numerical rating.

If the results of the psychological examination are to be reliable and have significance, two conditions are absolutely essential, namely, a competent examiner and a co-operative subject. By "competent examiner" we mean one who has a well-rounded theoretical background, supplemented by special study of the field of mental testing, together with sufficient experience in the giving of tests to insure that mastery of the technique of testing which no amount of reading will supply. Brief courses and summer school are, for that reason, insufficient preparation for giving and interpreting psychological tests. Emotional conditions are of exceedingly great importance in their influence on test results. It is necessary to dispel the notion that the subject is tested because he is thought to be "feeble-minded" or "crazy". The educational and vocational implications should be stressed even if they are only incidental reasons for the study. It is surprising how few patients fail to co-operate when frankness and understanding handling are employed by the examiner.

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Kay and Graham's Phosphatase Test Applied to Ontario Milk*

M. DOREEN SMITH, M.A., PH.D.
Connaught Laboratories, University of Toronto

THE need for a quick and accurate method of distinguishing not only between raw and pasteurized milk but between faulty and efficient pasteurization has been long-felt. From time to time various methods have been suggested, a number of which have depended on the heat-lability of one or other of the following enzymes which occur naturally in milk, namely: peroxidase, catalase, reductase, diastase and phosphatase. The test based on this last-named enzyme, phosphatase, was designed by Kay and Graham in 1933 (1) and very much modified by them in 1935 (2).

The test depends on the fact that phosphatase occurs in raw milk; that the presence of this enzyme is easily detected since it rapidly hydrolyses phosphoric esters at body temperature; and finally that it is destroyed when held at a temperature of 145°F. for thirty minutes. In the revised test of Kay and Graham (2), the ester, disodium phenyl phosphate is used as substrate with sodium diethyl barbiturate as buffer. Phenol, set free during hydrolysis of the ester, is determined by Folin and Ciocalteu's reagent as a measurement of the phosphatase activity. A report on the application of this test to samples of Ontario milk follows.

Numerous samples of milk from various sections of Toronto and from many parts of Ontario were supplied to us through the kindness of the Department of Public Health, Toronto, and of the Department of Health of Ontario. During a period of two months (December, 1936, and January, 1937), 280 samples of milk were tested. About half of these were samples from Toronto. The short phosphatase test (test A) was carried out first on each of the samples. In doubtful cases the longer test (test B) was applied. The tests were usually made on the day on which the samples were received. It was found, however, that both the raw and pasteurized milk could be stored in a refrigerator for one or two days without affecting their reaction to the phosphatase test. Anderson, Herschdörfer and Neave (3) report a similar finding for pasteurized milk.

RESULTS OF THE TEST ON SAMPLES OF ONTARIO MILK

The accompanying table shows the results of the phosphatase test (test A) on samples of Ontario milk labelled pasteurized. The colour standard used was the Lovibond "Limitester", the glass of which contained 2.3 units of blue. The majority of the samples under the heading "pasteurized" exactly matched their respective controls; a few were a shade more blue than the controls but

*Presented before the Laboratory Section at the Twenty-sixth Annual Meeting of the Canadian Public Health Association, Ottawa, June 18, 1937.

were within the 2.3 colour limit. Those grouped as "slightly imperfect" were just a shade more blue than the 2.3 of the Limitester. The groups headed "definitely underheated" were medium deep blue, while those "like raw" were deep blue. If the control and incubated tubes were kept and re-examined some hours and even several days after the test had been completed, the shades of blue colour in these tubes remained unchanged. This stability of colour proved a useful feature in carrying out the test since it made it easily possible to have independent readings on equivocal or irregular results.

TABLE I

PHOSPHATASE TEST A, AS APPLIED TO PASTEURIZED MILK IN ONTARIO

	Toronto milk	Ontario milk, excluding Toronto	Ontario milk, including Toronto
Total number of samples	131	87	218
Pasteurized	117 (89.4%)	75 (86.1%)	192 (88.1%)
Slightly imperfect	6 (4.5%)	6 (6.9%)	12 (5.5%)
Definitely underheated	7 (5.3%)	5 (5.8%)	12 (5.5%)
Like raw	1 (0.8%)	1 (1.2%)	2 (0.9%)

In column I, the sample of Toronto milk which showed as "raw milk" and most of the samples found to be "definitely underheated" came from one dairy. A check-up by a city inspector on this dairy showed one of the thermometers to be inaccurate to the extent of several degrees.

The percentage of pasteurized samples of Ontario milk, excluding Toronto, is slightly less than the percentage of Toronto samples. Since most of these samples came from many sections of the province, rural as well as urban, greater irregularities are to be expected.

In addition to the samples of "pasteurized" milk from parts of Ontario other than Toronto, thirty samples of raw milk also from parts of Ontario other than Toronto were tested by the phosphatase test A. These were all found to give the deep blue colour reaction, characteristic for raw milk.

The summary of the results (table I, column 3) shows that on the whole the pasteurizing plants in Ontario are operating with a fair degree of efficiency, as judged by this test. The results also show that in some cases there is need for improvement. It is worthy of note that the tests on Ontario milk compare very favourably with those on English milk as published by Kay and Graham (2) and Kay and Neaves (4). Grouping together all the samples reported in these two papers, only 67 out of 117 tested (57 per cent.) were found to be pasteurized, whereas out of 218 samples of Ontario milk labelled pasteurized, 192 (88 per cent.) were found by the test to be properly pasteurized. Because the minimum temperature for pasteurization in Ontario is 143°F.*, most of the dairies to be on the safe side have set their thermometers at 145°F. This, no doubt, accounts for the good results obtained with the phosphatase test A.

*Regulations for Ontario require that "pasteurization" shall mean the process of heating every particle of milk to a temperature of not less than 143 degrees Fahrenheit, of holding it at such a temperature for not less than 30 minutes, and of cooling it immediately thereafter to 50 degrees Fahrenheit or lower.

In doubtful cases the longer test B was applied and sometimes also, as a further check, the original phosphatase test (1) was carried out. In this older test, sodium B-glycerophosphate is used as substrate and free inorganic phosphate is the end product measured after hydrolysis. My experience with this first method of performing the phosphatase test was that raw and pasteurized milk could be readily differentiated, but because the control tube always showed considerable blue colour, due to the inorganic phosphate naturally present in the milk, degrees between the pasteurized and raw milk were not so easily distinguished.

Kay and Graham (2) present, in their paper relating to test B, a graph showing the minimum time of incubation for varying temperatures of pasteurization. As closely as one can estimate from this graph, the time of incubation for milk pasteurized at 143°F. (the specified minimum temperature for pasteurization in Ontario) would be four and a quarter hours. The longer test B then, for use on Ontario milk would require incubation for four and a quarter hours at 37-38°C. This was used on some of the doubtful samples but it would be necessary before recommending this four-and-a-quarter-hour period that a number of samples of raw Ontario milk be carefully pasteurized in the laboratory according to the Ontario regulations and the exact length of the incubation period for the longer test be determined on these pasteurized milks.

The performance of the phosphatase test is not difficult; nevertheless at one period during the carrying out of this survey a series of irregularities occurred, the explanation of which is not yet clear. On one occasion, six out of eight samples of milk marked "pasteurized" from the Provincial Laboratory, when tested, were found to be much bluer than the controls and three gave a blue colour indicative of raw milk. This result was somewhat unusual since the samples had come from what were considered reliable dairies. An attempt was made to explain the apparent discrepancy by carrying out a series of pasteurizing experiments. Each sample of milk was divided into three parts and all three parts heated for thirty minutes, the first at 143°F., the second at 145°F., and the third at 150°F., after which all the heated portions of milk were retested for phosphatase. The control tubes for these re-pasteurized milks were all pale blue and the incubated tubes of the milk pasteurized at 150°F. were mostly pale blue or less blue than medium while the incubated tubes of those heated at 143°F. and 145°F. were mostly medium blue or the deep blue typical of raw milk.

The next twelve samples of milk from the Provincial Laboratory gave the same proportion of positive phosphatase tests and these positive samples were likewise divided into three parts and one part of each heated for 30 minutes at each of the above-mentioned temperatures. The results of the phosphatase test on the heated samples were very much the same as those obtained with the preceding group.

A few days later some samples of milk from the laboratory of the Department of Public Health, Toronto, gave similar results, though in these the control tubes showed a deep blue which persisted for a few minutes only and then

faded to the very pale blue of the regular controls. After separate portions of each milk had been pasteurized at the temperatures indicated above and re-tested, the controls were normal, whereas some of the incubated tubes were again deep blue. Because of the differences noted above in the controls, the method and materials used in cleaning the glassware were scrutinized, but no possibility of contamination by phenol or other substances capable of giving a positive reaction with Folin and Ciocalteu's reagent was evident. A check was then made on the reagents used. King and Armstrong have suggested that the disodium phenyl phosphate solution be tested for phenol if hydrolysis is suspected. The buffer substrate solution, which had been used for the tests on all these milks with anomalous results, was tested for free phenol but the result was negative, even after incubation. This was not surprising, considering that the controls, on the whole, had been consistently good. However, the next day the test for free phenol was repeated on the buffer substrate solution. This time the result was positive, and the solution was discarded.

In their directions for the preparation of the buffer substrate solution, King and Armstrong (5) state that the solution should keep for a month, when stored in the cold. On the other hand, Kay and Graham (1), while they remark that the ester is quite stable, recommend that the solution should be freshly prepared every three days.

An experiment on the keeping quality of the buffer substrate solution was carried out. Three lots were prepared and stored for two months, one at room temperature and two on the ice. At first, every day or so and later on once a week, the phosphatase test A was set up on a fresh sample of pasteurized milk in such a way that there were three controls and three incubated tubes prepared from each lot of stored buffer substrate solution. Triplicate controls and incubated tubes were also set up using a buffer substrate solution which was freshly prepared each time a test was carried out. The results of these tests, however, were always normal, i.e., all the incubated tubes were the same shade of very pale blue as the controls. None of the buffer solutions when tested for free phenol gave any indication of hydrolysis, nor was there any change in pH. Since the completion of the work reported here, Anderson, Herschdörfer and Neave (3) have published data on the stability of the buffer substrate and have shown that there is no evidence of hydrolysis during nine weeks in the refrigerator.

Though we have not yet been able to prove that the buffer substrate solution was responsible for the inconsistent results, it was decided, for the remainder, which was the majority of the tests shown in the table, that fresh solution be prepared each time a series of tests was being performed. However, after the period of discordant results, any samples which gave more blue that the 2.3 were re-tested by the older glycerophosphate method. The two methods always checked so that it could be concluded that the presence of free phenol, when using the new phosphatase test, was due to the activity of the enzyme phosphatase. The group of anomalous results discussed above is not included in the table.

SUMMARY

The results of a study of the application of the modified phosphatase test to 280 samples of raw and pasteurized milk from various districts in Ontario have been given. A difficulty which was encountered in carrying out the test and which cannot be wholly accounted for, has been discussed.

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Smallpox Vaccination in Windsor, Ontario

F. ADAMS, M.B., D.P.H.
Medical Officer of Health

AS may be remembered, the Border Cities suffered in 1924 from an outbreak of very severe smallpox. At that time the Local Board of Health conducted an intensive campaign to vaccinate as large a percentage of the population as possible. The public response was exceedingly good so that we emerged from the outbreak probably the best vaccinated community in North America. The result of this wholesale vaccination was that we had no smallpox whatever in the community for many years. As a consequence there was no particular reason why the Board of Health should concern itself with annual vaccination campaigns.

There was, however, another side of the picture which must be understood. Prior to amalgamation in July 1935, the district which now is the City of Windsor had nine school boards presiding over nine school systems. Two of the school systems had complete school health services, others had incomplete services and still others no health service whatever. All the health services referred to above were under the educational authorities. In certain of the school systems, vaccination on entering school was systematically urged on parents with the result that most of the school children were vaccinated. In other school systems vaccination was not urged so enthusiastically and in still others it was not urged at all. With the coming of amalgamation and reduction in the number of school boards from nine to two, the Board of Health decided that it might very well take a hand in promoting the vaccination of school children.

The school boards were approached and readily agreed to help. The separate schools had at that time (February 1937) no school health organization and in these schools the Board of Health was to provide everything in the way of doctors, nurses, printed matter, etc. The Separate School Board's contribution consisted in allowing the Board of Health to distribute pamphlets to the school children and in allowing use of the school premises for vaccinating purposes. In the case of the Windsor Board of Education, which operates the public schools, the high schools, and the technical school, we had the same privileges as in the separate schools and in addition we had the very welcome help of the doctors and nurses of their school health service.

The Board of Health printed one page announcements and these were distributed to the pupils in all the schools, approximately twenty-five thousand. We consider the character of this announcement important and for the information of those interested it is reproduced in full at the conclusion of this article.

The announcement made it plain that there was no compulsion whatever about the vaccination campaign: it urged parents to have their children vaccinated and to go to their own doctor if they were able to pay for the service; the offer, however, was made to vaccinate children free of charge provided that the parent signed the consent form on the reverse side. The announcement did not say that the community was in any particular danger from smallpox but it did say that the Board of Health was disturbed over the fact that a considerable portion of our population was not vaccinated.

The response was, in our opinion, very satisfactory. In all the primary and secondary schools of Windsor there are approximately twenty-five thousand pupils and we were asked to vaccinate almost seven thousand. In addition, many hundreds went to their own physicians for vaccination.

Vaccination Technique and Results

The following method was used in vaccinating: The area to be vaccinated, the deltoid region of the left arm, was washed with rubbing alcohol. Occasionally we found a child who had not been bathed sufficiently often and in such cases the arm was scrubbed with green soap followed by alcohol. Sufficient time was allowed for the alcohol to evaporate as indicated by the skin having become warm again, then a drop of the vaccine was put on the skin and a single short scratch was made through the drop. A genuine effort was made to limit the length of the scratch to about a sixteenth of an inch. The skin was then put on the stretch so as to open the tiny incision and the vaccine was rubbed in with the flat side of the needle. Children so vaccinated were kept seated with bare arms for ten minutes and then sent back to their classes with no dressings whatever over the vaccinations. We think this period of ten minutes or so of waiting to let the vaccine dry of some importance in obtaining the maximum number of "takes".

Each child vaccinated was supplied with a pamphlet on the care of the vaccinated arm. This pamphlet recommended loose clothing about the shoulder and the pinning of a clean old handkerchief to the dress or underwear in such a way that it would hang down over the vaccinated area as a loose shield giving a little protection, insuring cleanliness and yet not interfering with ventilation. The pamphlet warned against the use of vaccination shields made of celluloid or felt, which often do much harm by preventing ventilation and promoting a moist, congested, boggy state of the skin, thus inviting trouble in the form of secondary infection.

We had very little trouble from sore arms. There were, of course, some "takes" which were more severe than others but these were not numerous.

The scars, with the vaccinating method described, are usually not larger than 3/8 of an inch in diameter, about the size of the end of a cigarette. Having in mind future vaccination campaigns, it is important to avoid severe "takes" and large scars.

A total of 6,858 individuals was vaccinated. Of these, 4,774 had not previously been successfully vaccinated and 2,084 had a history of previous vac-

cination, the majority having been vaccinated more than seven years before. Of the 4,774 primary vaccinations there were 4,473 "takes" or 93.7 per cent. Of the 2,084 re-vaccinations there were 412 "takes" (19.7 per cent.).

SUMMARY

An account is given of the vaccination of almost seven thousand school children entirely on a voluntary basis. Vaccination was by the single short scratch method. Severe "takes" were very few in number. Vaccination scars were, as a rule, small.

APPENDIX

LOCAL BOARD OF HEALTH OF THE CITY OF WINDSOR
VACCINATION AGAINST SMALLPOX (1937)

The Board of Health is disturbed over the fact that a considerable portion of our population is not vaccinated against smallpox. It is under such circumstances that serious epidemics are apt to occur.

It is the view of the Board of Health that every person should be protected against smallpox by vaccination and periodic re-vaccination.

We strongly urge parents to have their children vaccinated at once if they have not been successfully vaccinated within the last seven years.

If you are able to pay a doctor, the Board of Health strongly advises you to take the children to your own physician. The protection is well worth what he will charge you.

If for any reason you do not wish to do this the Board of Health has arranged for vaccination without charge. If you wish to take advantage of the free vaccination by the Board of Health please sign the form on the back of this sheet and send it back to school with the child to whom it applies.

If your child has had a successful vaccination within seven years it is highly probable that he is immune. IN THAT CASE DO NOT SIGN THIS FORM.

If your child has had a successful vaccination but it is more than seven years ago it would be wise to have him vaccinated again and our advice would be to sign this form or take him to your own doctor.

There is nothing compulsory about this campaign. If you do not want to have your child vaccinated simply pay no attention to this circular. NO CHILD WILL BE VACCINATED BY US UNLESS THE FORM ON THE BACK OF THIS SHEET HAS BEEN FILLED IN AND SIGNED.

(*Reverse side*:)

Room No. .....

CONSENT FORM

I hereby request the Board of Health to vaccinate against smallpox the school child mentioned below.

NAME OF CHILD ..... Age .....

Street Address .....

School Attended .....

Signature of Parent or Guardian .....

DATE ..... 1937.

SPACE BELOW FOR BOARD OF HEALTH ENTRIES

Date of Vaccination .....

Examined .....

RESULT .....

Lead in Certain Coloured Chalks and the Danger to Children

C. M. JEPHCOTT, M.A., PH.D.
Division of Industrial Hygiene, Ontario Department of Health

CASES of lead poisoning in babies and children have arisen from various sources, particularly in oriental countries and in Australia. Prior to 1923 it was considered to be rare in Canada, but since 1930 it has been frequently recognised. During the last few years, lead has probably been the most common single cause of poisoning in children. Recently the introduction of micro-chemical methods for the quantitative determination of lead in blood and urine, the improved technique for the counting of stippled cells and the use of x-ray examinations, has led to a better understanding of the subject.

The mortality in children's cases is extremely high, especially in those cases showing cerebral symptoms. Stewart (1) reports one recovery in four cases, Blackfan (2) reports one recovery in four cases, and Holt and Howland (3) report one recovery in eight cases. The patients died of so-called lead encephalitis. In 1932, sixteen cases (4) of lead poisoning in young children were admitted to the Children's Memorial Hospital in Montreal, all of them under other diagnoses. Two proved fatal with acute cerebral manifestations. In 1933, McKhann and Vogt (5) presented data on eighty-nine cases of plumbism in children which had been treated during 1924 to 1933 at the infants' and children's hospitals in Boston. Of these, seventy-seven were classified as having lead intoxication and twelve as exhibiting latent lead poisoning. Of this group eleven patients died and twelve had permanent sequelae. More recently Ross and Brown (6) reported a total of twenty-three cases which were treated at the Hospital for Sick Children in Toronto during a two-year period. Ten had cerebral symptoms on admission and of these five died. One case resulted in a cerebral sclerosis with mental retardation and the remaining thirteen were cases of latent lead poisoning.

Recognition of Poisoning

In general the diagnosis of lead poisoning in children depends upon the same considerations that pertain to adults, i.e., a variable array of nervous disturbances, weakness, anaemia, the lead line in the gums, punctate basophilia of the red cells, and an excess quantity of lead in the urine. An x-ray examination of the long bones and the costo-chondral junctions, showing the increased density of the growing ends, is a valuable diagnostic aid. Although this sign may be caused by other factors, a carefully taken history will prevent error.

Poisoning following the ingestion of lead compounds appears to be dependent upon a number of factors. Age is of primary importance as children seem to be more susceptible to severe intoxication than adults. Some children

rapidly develop encephalitis after the ingestion of small amounts of lead, while others are capable of tolerating larger amounts with a minimal development of symptoms. The amount of lead which may be taken into the body to produce poisoning in a child is relatively very small, although exact figures cannot be given. Some idea of the amount may be gained from the fact that in a fatal case only two-thirds of a gram of metallic lead had been ingested.

Sources of Danger to Children from Lead

Lead poisoning in children occurs in the large majority of cases between one and two-and-a-half years of age or during the teething period. The habit of some children of biting any article within reach sometimes persists for some years and the most unusual substances are eaten. In most of the cases reported the poisoning has been attributed to the ingestion of paints containing lead pigments. These were derived from various sources as toys, furniture, window sills, verandah railings, etc. At the present time lead-free paints are readily available and, in Ontario, manufacturers of children's cots, play-pens and toys select their paints with this point in mind. Since 1932, factory legislation requires all lead-containing paints supplied to manufacturers to be so labelled. During 1933, 1934, 1935 and 1936 the number of cases of lead poisoning in children, admitted to the Hospital for Sick Children in Toronto, has remained comparatively constant (7). This, together with the history of exposure, indicates that the indiscriminate choice of paint for the repainting, in the home, of household articles such as cribs, baby carriages, play pens and verandah railings is important. However, there are other articles, used by children, which contain lead, such as certain coloured chalks, which may constitute a hazard.

Recently we had occasion to analyse various makes of coloured chalks. During the investigation it was noticed that chalks of certain colours, namely, yellow, orange and green, contained in some cases relatively large amounts of lead chromate. In chalks of other colours, namely, white, red, blue, brown and black, no lead was present. It was thought that these findings were of sufficient interest to report as it was realized that coloured chalks are used by children in the home and at school. Cleaning blackboards and brushes in school, often performed by children, will be accompanied by lead-dust inhalation when such chalks are used. Little or no reference has appeared in the literature on this subject. Ross and Brown mention that crayons may add to the lead intake to a minor extent but they did not report any analysis having been made. It is likely that crayons should be viewed with the same suspicion.

The results obtained are presented in table I.

The following 18 samples consist of the products of five different manufacturers. No special selection was made, the specimens being picked at random. As all these five companies used lead chromate pigment in their yellow, orange and green chalks, it is safe to assume that the practice is general. When it is realized that not more than two-thirds of a gram of metallic lead has caused a fatal case of lead poisoning, it is evident that these chalks, if continuously nibbled by children, contain sufficient lead to cause plumbism. In view of this

TABLE I

AMOUNT OF LEAD FOUND IN COLOURED CHALKS

Mfr.	Colour	Wt. of stick of chalk in gms.	% Pb CrO_4	Gms. of Pb CrO_4 in stick of chalk	Gms. of metallic lead in stick of chalk
A 1	Pale yellow.....	10.7	3.1	0.33	0.21
2	Yellow.....	9.8	13.0	1.27	0.81
3	Orange.....	10.8	12.2	1.32	0.85
4	Salmon.....	9.8	5.7	0.56	0.36
5	Yellow green.....	10.4	13.8	1.43	0.92
6	Dark green.....	9.7	6.6	0.64	0.41
B 1	Yellow.....	4.4	7.0	0.31	0.20
2	Buff.....	4.9	6.2	0.30	0.19
3	Pale yellow green.	5.2	6.6	0.34	0.22
4	Pale blue green ..	5.0	3.9	0.20	0.13
C 1	Yellow	5.6	14.2	0.80	0.51
2	Orange.....	5.7	21.8	1.24	0.79
3	Pale yellow green.	5.2	8.9	0.46	0.29
4	Pale blue green...	5.0	3.9	0.20	0.13
D 1	Yellow.....	11.5	20.3	2.33	1.49
2	Yellow green.....	13.8	42.9	5.92	3.79
3	Red orange.....	10.5	3.4	0.36	0.23
E 1	Deep yellow.....	5.7	30.3	1.73	1.11

consideration it seems advisable to restrict the use of yellow, orange and green chalks as manufactured at present or to use other colouring material of a non-toxic nature.

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ACCIDENT PREVENTION: A PUBLIC HEALTH FUNCTION

IN Ontario traffic accidents for the first four months of 1937 increased 37 per cent. over the corresponding total for 1936. Fatalities were increased by 59 per cent. The number of persons injured not fatally shows an increase of 32 per cent. over the same period of last year.

Each day the newspapers record the toll not only of traffic accidents but of drownings and of accidents in the home, office, shop and factory. Accident prevention work is fundamentally a function of public health. This is no longer a question of opinion. The work of the medical and allied professions, whether private or public, is for the protection and conservation of human life.

Fundamental to the problem is the question: Why do accidents occur? No longer is the position tenable that accidents are a matter of misfortune or ill luck. The limited studies that have been made indicate clearly that many accidents have an explanation in physiological and psychological defects or inadequacies of the persons involved. How is such essential information to be obtained? The address of Dr. N. L. Burnette presented at the recent annual meeting of the Association and published in the June issue of the JOURNAL, and the report of the Association's committee charged with the study of accident prevention from the standpoint of public health, not only supply the answer to this question but are a challenge to the public health authorities of Canada. Public health experience provides known or indicated methods for making a more precise approach to the various aspects of the accident problem. It is by the application of the same methods that have been successful in the control of communicable diseases that similar essential information relating to accidents can be obtained. Such information was obtained by scientific investigators and in the light of this knowledge, control measures were intelligently directed. The need for such essential information in regard to accidents is now recognized. The call is to the public health authorities to give leadership in obtaining it. Traffic accidents are no longer only the problem of the departments of highways of our provincial governments but, with all accidents, are an urgent problem of the health departments.

SENSITIVITY TO DIPHTHERIA PROTEIN

THE term allergy is generally applicable to the phenomena of hypersensitivity and has become popularized chiefly through its application to hay fever and food idiosyncrasies. The use of skin tests to indicate sensitivity to individual pollens or to foods is widely used in clinics. The evidence of such sensitivity is manifested by the rapid development, within a few minutes, of a wheal of an urticarial nature. An entirely different type of response, however, is manifested in skin sensitivity to bacterial proteins; for example, the reaction to products of growth of the tubercle bacillus. This reaction develops relatively slowly, within 24 to 48 hours. Sensitivity to diphtheria protein is of a similar character. These manifestations of sensitivity as revealed by the tuberculin and by the toxoid ("Moloney test") reaction tests are specific in nature. If tuberculin is injected in sufficient quantities into a tuberculin-positive person or diphtheria toxoid into a "toxoid reactor", local and constitutional symptoms will develop, the severity of which will depend upon the quantity given and the degree of sensitivity of the individual.

In the administration of diphtheria toxoid for active immunization one of the problems has been the reactions produced, especially in adults and older children. These groups, particularly those living in urban centres, have become sensitized by virtue of infection, not necessarily or commonly associated with clinical manifestations, with *C. diphtheriae*. McKinnon and Ross have shown that approximately 15 per cent. of school children in the upper grades were "toxoid reactors" in 1933. As diphtheria decreases and the chance of infection with *C. diphtheriae* diminishes, the percentage of reactors should be less in proportion. Not only has the incidence of diphtheria decreased in Toronto, but also the number of carriers. As evidence of this, careful examination of approximately six thousand nose and throat cultures in school children in the last three years revealed only four carriers of virulent diphtheria bacilli.

Infection, and consequent sensitivity, is not a guarantee of immunity. This is true of vaccinia, of tuberculosis and of diphtheria. A person previously vaccinated with vaccine virus is skin-sensitive to the virus but this fact does not preclude a "take" (vaccinoid type). A tuberculin-positive individual may develop clinical tuberculosis and a toxoid reactor may develop diphtheria. However, in the neighbourhood of 75 per cent. of toxoid reactors are immune. Among approximately 3,000 school children who were found to be reactors, one quarter of the number of cases of diphtheria occurred as occurred in their untested and untoxoided schoolmates.

That sensitivity to toxoid or the proteins of the diphtheria bacillus may be rapidly developed has been shown by the study of Allin, Fraser and Hannah appearing in this issue. The numbers are small and the observations should be extended. The duration of this sensitivity will require further investigation but because reactors are not uncommon in older children not living at present in a diphtheria environment the presumptive evidence that the sensitivity is lasting is strong. It is of practical significance that reactors as a group are readily immunized by relatively small amounts of toxoid (diluted toxoid for reactors).

REPORTS FROM THE ANNUAL MEETING*

Part II

FOURTH ANNUAL REPORT OF THE COMMITTEE ON THE CERTIFICATION OF SANITARY INSPECTORS

IT is gratifying to record increasing interest on the part of municipal departments of health and of sanitary inspectors in all the nine provinces in the work of the Committee. The purpose of the Committee is well-known; namely, to improve the status of the sanitary inspector in Canada by having health authorities recognize the importance of establishing a minimum qualification for the office, and to afford to inspectors the opportunity of obtaining an acceptable certificate as evidence of adequate training and experience.

It is, of course, recognized that the objective of the employment only of trained inspectors will be achieved only after a period of years of continuous effort. It will require also a change in the organization of local health departments in rural areas and the smaller urban centres to permit of the employment of trained inspectors on a full-time basis. Little can be hoped for as long as the local sanitary inspector is only a part-time employee and performs many other duties that are in no way related to his work as a sanitary inspector. Such sanitary inspectors have, as a rule, neither the preliminary education nor the training and experience that would permit them to qualify as sanitary inspectors.

The effort of the Committee is therefore directed primarily to meet the needs of the provincial departments of health and the larger municipalities where full-time inspectors are employed. It is the desire of the Committee that legislation be enacted in each of the provinces requiring that sanitary inspectors be qualified before being appointed. In the Province of Manitoba such legislation has been in force for several years and in several other provinces serious consideration has been given to the subject during the past year. It is obvious that such a provincial requirement would relate primarily to the employment of sanitary inspectors on a full-time basis. Conditions vary greatly in different provinces and require different legislation.

The increasing interest has been evidenced by the encouragement given to sanitary inspectors by a number of municipal departments of health during the year to take the examinations. In Toronto, Windsor, Winnipeg, Calgary and Vancouver, courses of training were arranged for the members of these departments who had made application for the examinations. Such courses of training have been regularly provided by the Department of Health of the City of Winnipeg for a number of years, with the result that all the sanitary inspectors employed by the department are fully qualified, having obtained the certificate

**Presented at the Twenty-sixth Annual Meeting of the Canadian Public Health Association, Ottawa, June 17-19, 1937.*

of the Royal Sanitary Institute or other acceptable qualification. The Committee desire to record their sincere appreciation of the co-operation of the medical officers of health of these cities in providing these courses that have served to demonstrate what may be accomplished by municipal departments in the training of their inspectors.

Not only were these courses available to the inspectors of the departments but in each instance candidates who were not employed by the department were permitted to attend the courses and participate in the field work.

At the last meeting of the Central Board of Registration and Examination the preparation of a manual was recommended and I am pleased to record that such a manual will be made available for distribution at the end of this month. It has been prepared under the direction of Dr. R. D. Defries and Mr. A. S. O'Hara, M.R.San.I., Provincial Sanitary Inspector, Sioux Lookout, Ontario; Dr. A. E. Berry, Director of the Division of Sanitary Engineering, Department of Health of Ontario, Toronto; Dr. A. R. B. Richmond, Director of the Division of Food Control, Department of Public Health, City of Toronto; Dr. F. M. R. Bulmer, Division of Industrial Hygiene, Department of Health of Ontario, Toronto; and Dr. L. A. Pequegnat, Deputy Medical Officer of Health of Toronto. The manual will be a guide to the candidate in the preparation for the examinations and will supplement the syllabus and recommended text books and other references which have already been published. The manual is in the form of a mimeographed outline and is being made available at the nominal price of two dollars. The Committee believe that in the course of a few years it will be possible to publish the manual in book form with an adequate number of illustrations.

The Committee believe that, with the manual and the co-operation of the municipal departments of health in the larger cities in providing courses of training, good progress can be made for the present in the training of inspectors, particularly of prospective inspectors who desire to qualify for appointment. To attain the objective of the Committee, an adequate number of capable young men with proper secondary school education and with as much practical experience in sanitary inspection as can be obtained, must be available for full-time appointments, having passed the certifying examinations.

The past year was a test of the efficiency of the organization of the Committee in regard to registration and the conducting of the examinations. These were held on September 23rd, 24th and 25th in five provincial centres: Saint John, Montreal, Toronto, Edmonton, and Vancouver, and occupied three days. One day and a half was utilized for the preparation of an assigned inspection report and an oral examination, and the remaining day and a half for the writing of three examination papers in sanitation, food control, and prevention and control of communicable diseases. When it is realized that the establishing of examination centres requires the appointment of three members in each centre, the supervision of the assigned inspections, the preparation of examination papers, report forms, examination books, etc., the extent of the work entailed by the Central Committee is appreciated.

Applications were received from fifty candidates, of whom forty-two were accepted and the candidates permitted to write the examinations. In this connection it is necessary to record that the requirements for registration relate to those who are not at present employed as sanitary inspectors, for the Committee has provided that until January 1, 1939, any sanitary inspector now employed is permitted to sit for the examinations. After that date the same requirement will be demanded of all candidates that is now made of those who are not employed as sanitary inspectors; namely, an approved secondary school education. Every opportunity is therefore being given to employed sanitary inspectors to obtain the qualification.

The report of the Examining Board indicated that the majority of candidates obtained a satisfactory standing. Of the forty-two candidates, thirty-seven passed or were conditioned in one subject. Candidates failing in one subject are permitted to rewrite the paper at the next annual examination and must complete the work, including the oral examination, before the certificate is granted. The following are the successful candidates:

Alberta: Reginald Jackson, John C. Mooney, and John H. Reid.

British Columbia: Henry Blacklin, Reginald P. Devine, Vernon Enman, Joseph Fuller (*Sanitation*), Stanley W. George, Elwood S. Gropp, Sidney P. Heasman, Samuel C. Kinniston (*Sanitation*), George A. Rogers, Laurence E. Robertson (*Sanitation*), Robert Skinner, James K. Smith, Reginald Startup, and Henry G. Henderson-Watts.

New Brunswick: Wm. Percy Keirstead.

Ontario: Ziba Bond, John L. Cavers, Harry Dennison (*Sanitation*), Albert J. Harrison, William S. Hill, Charles Ireson, Robert W. Kindred, Archibald P. Love, Donald McDonald (*Field Work*), John P. Mardall (*Communicable Diseases*), William D. Marson, Melville F. Matthews, Thomas G. Miller, Thomas Neill, William J. E. Osborne, Arthur E. Ruggles, Robert W. Ruggles, and Clare E. Wattam.

Quebec: Joseph A. Belanger.

The 1936 examination papers were as follows:

FOOD CONTROL AND LEGISLATION

Time: 3 hours

Answer any FIVE *of the six questions.*

1. What diseases are spread by milk? Outline in detail the procedure which should be carried out in the production of milk, from the cow to the consumer, to ensure a safe milk supply.

2. Explain the following public health measures and name in each instance the diseases the incidence of which may be reduced thereby: (*a*) restaurant inspection, (*b*) meat inspection, and (*c*) supervision of ice supplies.

3. A complaint has been made regarding a small slaughter house, located on a stream near a town. What conditions would probably be found? As the owner is willing to rebuild, what specific recommendations would you make in regard to design, construction, and operation?

4. Discuss the work of the sanitary inspector in the community as a health instructor, giving examples.

5. Write notes on: (*a*) adulteration of food products, (*b*) food poisoning, and (*c*) supervision of the sale of fish and other sea food.

6. Differentiate the functions of the federal, provincial, and municipal health departments.

PREVENTION AND CONTROL OF COMMUNICABLE DISEASES AND RELATED SUBJECTS

Time: 3 hours

Answer any FIVE *of the six questions.*

1. An epidemic of typhoid fever occurs in a small city. What sources of infection must be investigated? What control measures would be necessary in each of the sources investigated?

2. "Communicable diseases are due to living agents." Discuss the significance of this statement in relation to (*a*) quarantine, (*b*) isolation, (*c*) disinfection, and (*d*) prevention by immunization.

3. Explain the following terms as they apply to smallpox:

(*a*) Notification.

(*b*) Isolation.

(*c*) Quarantine.

(*d*) Terminal disinfection.

4. (*a*) Describe briefly the life history of the house fly.

(*b*) Outline the methods of control.

(*c*) What diseases may be spread by the house fly?

5. Write notes on: (*a*) Control of bed bugs.

(*b*) Crude death rate.

(*c*) Droplet infection.

(*d*) Diphtheria toxoid.

(*e*) Carriers.

SANITATION

Time: 3 hours

1. Describe the sanitary facilities, including a safe water supply, which should be supplied for:

(*a*) A farm house.

(*b*) A lumber camp of 100 men.

(*c*) A rural school.

2. What, in your opinion, constitutes the most important features of good housing? Enumerate the items to which you would pay special attention in making an inspection of a lodging house.

3. Outline the plumbing and drainage system of a dwelling, installed in accordance with local by-laws, illustrating with a sketch showing:

(*a*) Laundry tub in the cellar.

(*b*) Sink on the ground floor.

(*c*) Water-closet, bath, and wash-basin on the second floor.

4. How would you proceed to make a sanitary survey of a municipality and what information would you secure? Describe how this information could be presented intelligently to the officials of the municipality.

5. What are the constituents of refuse from a city? Describe the methods which may be employed in the disposal of refuse, mentioning advantages and disadvantages of each method.

Provision was made in the Regulations for the granting of the certificate (until January 1, 1939) without examination to holders of the certificate of the Royal Sanitary Institute or other qualification acceptable to the Board. Two candidates were granted the certificate on this basis during 1936: Wallace Pillidge, A.R.San.I., and John Cowey, Certificate of Inspector of Nuisances, Royal Sanitary Institute. Both Mr. Pillidge and Mr. Cowey are members of the Department of Health of Calgary.

The total number of candidates who have received the certificate since the first examinations were held in 1935 is 49, of whom seven holding acceptable certificates were qualified without examination.

The Committee desire to express appreciation to the Chairmen of the five Provincial Examining Boards and to the members of each of these boards who so kindly co-operated in the holding of the examinations. The Boards of Examiners were as follows:

British Columbia: Dr. J. W. McIntosh, Medical Officer of Health, Vancouver, *Chairman*; Mr. Alexander McCulloch, C.S.I.(C.), Assistant Plumbing Inspector, Vancouver; and Mr. John Oliver, Assistant City Engineer, Vancouver. Dr. G. F. Amyot of the Provincial Board of Health, assisted Dr. McIntosh as Vice-Chairman.

Alberta: Dr. R. B. Jenkins, Medical Officer of Health, Edmonton, *Chairman*; Mr. George E. Cottle, Provincial Sanitary Inspector, Edmonton; and Mr. Dudley B. Menzies, Provincial Sanitary Engineer, Edmonton.

Ontario: Mr. Hugh McIntyre, A.R.San.I., Provincial Sanitary Inspector, Kirkland Lake; Dr. L. A. Pequegnat, Deputy Medical Officer of Health, Toronto; and, in the absence of the Chairman, Dr. R. D. Defries, School of Hygiene, University of Toronto, and Dr. J. T. Phair, Chief Medical Officer of Health of Ontario.

Quebec: Dr. S. Boucher, Director, Department of Health, Montreal, *Chairman*; Mr. Aime Cousineau, C.E., Sanitary Engineer, City of Montreal; and Mr. T. J. Lafreniere, C.E., Sanitary Engineer, Ministry of Health of Quebec, Montreal. Dr. Grant Fleming, Director of the Department of Public Health and Preventive Medicine, McGill University, assisted Dr. Boucher as Vice-Chairman.

New Brunswick: Dr. C. W. MacMillan, Provincial Department of Health, Saint John; Dr. R. A. H. Mackeen, Director of Provincial Laboratories, Saint John; and Mr. John N. Flood, A.M.E.I.C., Consulting Engineer, Saint John.

This year's examinations will be held on September 22nd, 23rd and 24th. Applications are being received from a number of inspectors and it is of special interest that a considerable group of prospective inspectors are preparing for the examinations.

J. T. PHAIR, *Secretary*. J. G. CUNNINGHAM, *Chairman*.

REPORT OF THE COMMITTEE ON RURAL HEALTH CONSERVATION CONTESTS

INFORMAL discussions last fall by the Executive Committee of the Association with the Committee on Rural Health Conservation Contests of the American Public Health Association were followed in February by the appointment of this committee and the completing of arrangements whereby rural health conservation contests would be conducted in Canada. Such a plan was possible only through the generous co-operation of the American Public Health Association and the W. K. Kellogg Foundation.

Introduced four years ago, rural health conservation contests in the United States have been found of value in enlisting public support for local health administration and in promoting the development of sound rural public health services. The Executive Committee therefore believed that similar provision in Canada would be appreciated and would be of assistance in forwarding the movement for full-time rural health services in the Dominion. In the present plans the whole of Canada will constitute one area for the purposes of the contest. The contest will be limited to the rural municipalities with at least a full-time health officer. To permit of ample time for the organization of the work, it is planned to hold the first contest in the spring of 1938.

All full-time units participating in the contest appraise their health activities by preparing a fact-finding schedule which covers minimum basic essential rural public health services. In compiling the fact-finding schedule, it is essential to use the services of a local lay committee because it is in this way that the people learn about the situation of their own area and become interested in public health developments. The importance of making the most effective use of such a group cannot be overemphasized. The appointment of the local lay committee is one of the requisites in entering the contest. It should have representatives of business and industry or agriculture as well as professional representation. It should co-operate with the local health, education, and civic agencies in the effort to bring about definite improvements in health conditions. With but few exceptions the questions in the fact-finding schedule have been taken from the Appraisal Form for Rural Health, third edition, published by the American Public Health Association in 1932. The schedule permits of a reasonably sound judgment of the community public health program. These schedules are passed upon by a Grading Committee and a detailed analysis of each schedule is forwarded to the unit which submitted it.

Although the competitive aspect of the contest tends to stimulate and sustain interest, it is designed primarily to encourage the development of sound rural public health work. Field service, supplied by the full-time staff of the American Public Health Association, will make contacts with the units in the furtherance of this objective. These visits by representatives of the Grading Committee are of great assistance to the administrative officer in charge of the local units and to the members of his staff, giving the opportunity for discussion of local problems in the light of current practices. The winning

unit will be awarded a suitable plaque, and certificates of honourable mention will be presented where the Grading Committee considers that these have been earned.

The Committee is greatly indebted to Dr. Carl E. Buck of the American Public Health Association for his conferences with the Committee and for his co-operation and assistance in the development of these plans. The Executive Committee have already expressed their appreciation of the generous action of the American Public Health Association in making possible the arrangements for the conduct of these contests in Canada, entailing as the plan does very considerable financial expenditures and additional work for the Grading Committee.

J. T. PHAIR, *Secretary.* GRANT FLEMING, *Chairman.*

REPORT OF THE COMMITTEE ON ACCIDENT PREVENTION

THE Committee, formed in June of 1936, held a number of meetings in Toronto. In addition, considerable correspondence has been conducted with persons and organizations engaged in research into the causes of traffic accidents; information has been exchanged, and much data accumulated.

Under the supervision of Professor Chant, some experimental work is being conducted in schools in Toronto to determine the prevalence of left-handedness and its connection, if any, with certain peculiarities of vision, as it is believed that this combination of factors may throw light on certain types of accidents. Arrangements have also been made for Professor Chant to visit and report on the work of Doctor Selling, in charge of the Psychiatric Clinic of the Traffic Court in Detroit.

A valuable contribution to our further knowledge of the Canadian traffic accident picture was made by Doctor Sellers, who analyzed the 1936 figures for Ontario and who also made a supplementary study of the combined statistics for a six-year period.

Commenting on this, Doctor Sellers offered the following opinions:

> "It seems to be desirable to make a study of the intrinsic or human factors involved in motor accidents, that is, the human deficiencies or defects or maladjustments, whether they be mental or physical. This approach requires a study of the variations in reaction time, judgment of space relationships, motor co-ordination, etc., and their relation to accidents; and a study of the findings in respect to such physical defects as limitations of vision, hearing, intelligence level and the like.
>
> "Furthermore, it appears desirable to make a study of the extrinsic factors, such for example, as that usually collected, supplemented by a study of other possible factors which might be obtained through a personal canvass of persons involved in accidents."

With these points of view the Committee as a whole is in entire agreement, and following preliminary deliberations, members of the Committee met with members of the Motor Vehicles Branch of the Ontario Department of High-

ways, and, after a full discussion of the whole problem, offered to co-operate with the Department of Highways along the lines noted.

The Committee believes that its chief immediate duty is to change the present attitude toward accident prevention work to the end that both the public and the profession will recognize that prevention is fundamentally a function of public health, and that there are known techniques in public health practice which should be applied to the traffic accident problem. It is encouraging to note that recent utterances in the lay press indicate the beginning of an understanding of this viewpoint.* Because of this, it is important that the public health field prepare itself to meet requests for technical advice and assistance.

The Committee feels that, for the present, it is desirable to confine its activities to the problem of traffic accidents, but that we should not lose sight of the increasing toll of disability and mortality due to other forms of mishap, particularly those occurring in the home; and that at some appropriate time, this matter should receive serious attention.

The Committee recommends that:

(1) The step forward taken in connection with the Department of Highways for the Province of Ontario, should be duplicated elsewhere. The several Provincial Health Departments might be approached with a view to developing co-operation between them and other official bodies at present interested in safety work.

(2) Non-official local agencies engaged in the education of the public in connection with traffic safety should be encouraged to make use of the services of municipal health departments when planning safety campaigns.

DR. N. L. BURNETTE, *Chairman*; DR. J. T. PHAIR, DR. A. HARDISTY SELLERS, PROFESSOR S. N. F. CHANT, DR. A. GRANT FLEMING, DR. J. G. CUNNINGHAM, and DR. J. M. LIVINGSTON.

REPORT OF THE COMMITTEE ON HOUSING

THE Federal Government, within the past few years, has been doing a great deal to help solve the housing problem in Canada. By making it possible to secure money at a moderate rate of interest, it has encouraged many to build new houses or rehabilitate old ones. It is eminently desirable that these houses be constructed, remodeled and maintained in such a way as to meet the accepted standards of health, decency and amenity. This can be achieved only through the passing and enforcing of a Model Housing Law—a provincial, not a federal responsibility.

*A Canadian press despatch of May 13th said in part: Typhoid fever, smallpox and diphtheria, one time killers on a large scale, have been so reduced by means of preventive medicine, that they now represent but a small proportion of Canada's death rate. Accidents are essentially preventable, just as are many of the causes of death listed above.

Your committee feels that distinct progress has been made towards the accomplishment of this end. Within the past year, the housing law prepared by your committee has been under consideration by many public health authorities. Comments and suggestions coming to the committee from these sources have been pertinent and helpful. Some very valuable recommendations of a practical nature have been received regarding those things which should be considered in condemning a house as being unfit for human habitation. On the whole, it may be said there is general agreement with respect to the main provisions of the suggested housing law.

Your committee hopes and feels that before the passing of another year, this work shall have been completed with the preparation of a good housing law that can be readily and safely adopted by all the Canadian provinces.

As evidence of the keen and progressive interest in this important question, attention is drawn to the amendments to the housing by-laws recently made in the cities of Toronto and Hamilton.

During the current year, a resolution sponsored by Mr. Denton Massey, M.P., called upon the Federal Government to give "full and immediate consideration to the setting up of a housing plan with a thought to eliminating slum conditions, to overcome the shortage of sufficient dwellings, adequately, properly and happily to house our population".

This resolution was enthusiastically supported by Messrs. Douglas Ross, Mellotte and Dunning, Miss Agnes MacPhail, and others, but unfortunately was not acted upon. It is expected the question will be brought up again at the next session of the House of Commons.

In January of this year, the Montreal Metropolitan Commission conducted a survey of 1,376 dwellings in fourteen wards of Montreal and one section in the adjoining municipality of Verdun. In this survey, it is stated that 77 per cent. of the houses were without a bath, and in 467 cases, the water-closet was in the kitchen. The model housing law suggested by your Committee demands a bath in every house, and forbids the placing of water-closets in kitchens.

It is satisfactory to remark that, in making this survey, the Committee adopted the overcrowding standard suggested by your Committee.

This standard for overcrowding is also endorsed by the Housing Committee of the Montreal Council of Social Agencies, which recently (1936) prepared a memorandum on "Housing for the Low-Wage Worker".

A by-law, perhaps the pioneer effort of its kind in Canada, to establish a standard of housing in the City of Toronto was passed by the Council of the Corporation on February 10, 1936. Civic officials detailed to the by-law have directed their efforts primarily to areas designated in an earlier report of the Lieutenant-Governor's Committee on Housing Conditions in Toronto. Up to and including May 31, 1937, 3,284 houses were inspected. Five per cent. were found satisfactory; another 50 per cent., satisfactory except for minor requirements. A further 5 per cent. have been demolished. In the case of the remainder (approximately 40 per cent.) more extensive repairs have been

required; of this 40 per cent. a further 2 or 3 per cent. face probable demolition. Overcrowding, found in 127 instances, has been abated in 114.

It is not out of place here to say that reports in recent English public health journals indicate very favourable comments on the application of the British Housing Act of 1935.

R. ST. J. MACDONALD, *Chairman.*

REPORT OF THE STUDY COMMITTEE, PUBLIC HEALTH NURSING SECTION

A STUDY COMMITTEE consisting of a small active group and a Dominion-wide representative consultant group was appointed by the Public Health Nursing Section in 1935. This committee was organized "to study such problems as may be referred to it as suggested in the General Secretary's memorandum and also in the Chairman's report" (1934-35).

After canvassing the field for opinions of health workers as to the most urgent research which should be undertaken by the Section, it was decided to make a study of the requirements for employment of public health nurses throughout Canada. To this end a questionnaire was sent to the provincial and municipal departments of health, non-official health agencies and industrial departments (with a health organization) employing public health nurses. A copy of this questionnaire is attached. In all, 48 replies were received: 8 from provincial departments of health, 9 from municipal departments of health, and 26 from industrial bodies. A careful study has been made of these replies in respect to professional training, experience, and to the practice in use for determining physical fitness before employment and thereafter.

Table I presents a summary of requirements for physical fitness.

TABLE I

REQUIREMENTS RE PHYSICAL FITNESS OF PUBLIC HEALTH NURSES EMPLOYED BY GOVERNMENTAL, NON-OFFICIAL AND INDUSTRIAL BODIES

Requirements	Official		Non-official	Industrial	Total
	Provincial Depts.	Municipal Depts.			
Physical examination before *and* during employment	2	1	2	6	11
Physical examination before employment only	3	1	1	14	19
Statement of physical fitness only	1	4	0	3	8
No check	1	1	2	3	7
No data given	1	2	0	0	3
Total	8	9	5	26	48

This table indicates that in the large proportion of organizations physical examination is not required; in 18 out of 48 organizations the provision in this respect would seem to be inadequate or not provided for at all; only 11 out of the 48 require physical examination before *and* during employment. The Committee feels that this is a serious lack in the requirements at present in practice:

1. Because of the close contact between the nurse and the people she serves, it is absolutely essential that her physical condition be known through examination before and during employment.
2. Maximum efficiency in useful service is the objective of organizations employing nursing services and this is best obtained by a physically fit staff.
3. Physical fitness of the staff is after all the exemplification of what is taught by health organizations.

Table II presents a summary of requirements in respect to professional training.

TABLE II

PROFESSIONAL TRAINING REQUIREMENTS FOR PUBLIC HEALTH NURSES

Requirements	Official		Non-official	Industrial	Total
	Provincial Depts.	Municipal Depts.			
Graduate nurse with post-grad. training in p.h. nursing.....	6*	6	4	4	20
Graduate of accredited hospital..	2	1	1	19x	23
No data.....	0	2	0	3	5
Total.....	8	9	5	26	48

*With alternative of graduate nurse with equivalent experience under supervision.
xSome specified as "registration", graduate of recognized training school, graduate of some hospital.

Here it is shown that in 20 out of 48 instances requirements include post-graduate study in public health nursing. However, it will be noted that in 23 instances this requirement is not included. The defect in this respect pertains particularly to the industrial group, in which 19 out of 26 did not stipulate such training.

The need is shown here for impressing on those employing public health nurses, particularly industrial organizations, that such training is essential. This might be obtained by having definite professional standards for employment of new staff and by practical "refresher" courses for staff already employed. The Committee further would point out the fact that the Divisions of Industrial Hygiene in the Provincial Governments have a definite contribution to make in health and industry which in turn involves the status of the nursing staff.

Table III presents a summary of experience required for employment.

TABLE III

EXPERIENCE REQUIRED OF PUBLIC HEALTH NURSES

Requirements	Official		Non-official	Industrial	Total
	Provincial Depts.	Municipal Depts.			
Special training or experience...	5	3	1	12	21
Experience alternative to post-grad. course in p.h. nursing...	2	1	0	0	3
Not required or no rule.....	1	1	4	4	10
No data.....	0	4	0	10	14
Total.....	8	9	5	26	48

This table indicates wide variation in respect to experience, 10 out of 48 stating that no experience was required.

CONCLUSION

After a careful review of the questionnaires returned and believing the preparation of minimum standards to be immediately desirable, the Committee strongly suggests that a special committee, with representatives from appropriate fields, be appointed to enquire further into this whole question and to prepare in detail a set of minimum standards for the employment of public health nurses, these standards to be presented for discussion and revision, and final approval.

LAURA A. GAMBLE, *Chairman.*

RESOLUTION

WHEREAS present studies made by a special committee of the Public Health Nursing Section have indicated in general the absence of uniformity in respect to standards for employment of public health nurses;

AND WHEREAS the elaboration and approval by this Section of a set of minimum standards is not only desirable but a necessary adjunct toward achieving definite improvement in such nursing personnel secured over the next few years;

AND WHEREAS further elaboration of such standards would serve to facilitate and encourage other desirable developments in the public health nursing field;

BE IT RESOLVED THAT the Public Health Nursing Section record its belief that the present lack of uniformity in respect to requirements for employment of public health nurses is unsatisfactory:

BE IT RESOLVED FURTHER THAT this Section appoint a representative committee to draft at an early date a schedule of minimum requirements for employment of public health nurses.

FOURTH ANNUAL REPORT OF THE COMMITTEE ON THE ANNUAL REPORT OF THE MEDICAL OFFICER OF HEALTH

FOR the past four years this Committee of the Association, representative of the leading departments of health, has been in communication with medical officers of health of all municipalities of 10,000 population and over in regard to the preparation of annual reports.

Their attention has been directed to the purposes of the annual report, stressing particularly the value of a statement by the health officer, concerning the state of public health in the community. The Committee feel that medical officers of health have a particular opportunity, in their annual reports, to direct attention to urgent health work, indicating how this may be accomplished by extension of services, passing of regulations, etc. It is gratifying to the Committee that an increasing number of health officers, chiefly in the larger cities, have accepted this suggestion and have prepared their report along new lines with a definite objective of fostering an intelligent and active public interest, anticipating that part at least of the report would be published in the press. The Committee has received press clippings covering more than twenty of the reports and from these it is evident that a very considerable amount of space has been given by the local press to the annual report of the health officer. In some instances the entire report has been published, and in others the statement of the health officer, together with an abstract of the statistical data, has been printed, often with an editorial expressing appreciation of the health department's work.

The Committee's work is not spectacular but it is believed that the persistent effort to keep this subject before the health officers and to assist them in the preparation of their reports by supplying the statistical forms approved by the Section of Vital Statistics for inclusion in health reports, will be rewarded ultimately by having comparable figures for municipalities of 10,000 population and over, and annual reports of greater value to the health officer and of more interest to the municipality.

In reference to the statistical tables, recommended by this Association for use in reports, the experience of the past year has confirmed their value. Almost all the departments have adopted the tables in part at least. In the instance of county health units and full-time health districts, it is not possible for the director of such administrative areas to compile the vital statistics. In Quebec all statistical work connected with health units is conducted by the Bureau of Statistics under the direction of Dr. Paul Parrot, Statistician of the Ministry of Health. The tables used by Dr. Parrot are similar and his co-operation in forwarding the purposes of the Committee has been greatly appreciated.

Further consideration has been given to the preparation of statistical tables for the use of rural and smaller municipalities. Tables in an abridged form were introduced in Ontario and it is hoped that in the following year specific recommendations will be made by the Committee for their general use.

The Committee has recognized that the inclusion of a budget in the annual

health report is most desirable. The need for some degree of uniformity in the preparation of health budgets was presented by Dr. R. B. Jenkins in 1933 as a result of a study which he made of the expenditures of cities of comparable size. In some municipalities all hospital costs are included, including sanatoria and isolation hospitals, together with indigent medical care. There is general agreement as to the exclusion from health budgets of such expenditures as garbage collection, street cleaning, and other activities usually associated with the Department of Works. Before any comparison can be made of the per caput expenditures for health in the different municipalities, an analysis must be made. The Committee has given thought to the defining of the activities which may properly be considered activities of the health department. The Committee on Administrative Health Practice of the American Public Health Association is also considering this subject.

The Committee is continuing to urge the adoption of the calendar year as the health year, thus making possible comparability of statistical data.

MISS MARY POWER, *Secretary.* D. V. CURREY, *Chairman.*

REPORT OF THE COMMITTEE ON THE REMUNERATION AND DUTIES OF THE MEDICAL OFFICER OF HEALTH

LAST year the Committee continued its efforts on behalf of a more universally acceptable definition of what might constitute the duties of the medical officer of health for any community. A review of the legislation which establishes in the various provinces his statutory responsibilities tends to the opinion that consideration might rightly be given to the clarification of existing legislation. By this is meant that while his authority is extraordinarily broad in certain provinces, his obligations are but poorly defined and the interpretation of what constitutes his duties is on some occasions left in the hands of those in the community whose knowledge of public health procedure must of necessity be confined to that possessed by the interested layman. Further, on occasion, this interpretation is biased by the convictions of uninformed advocates of passive behaviour. It is of interest to note that the completed report of the Committee on the Duties of the Medical Officer of Health has been accepted by the Department of Health for Ontario and distributed in appropriate form to the municipal authorities throughout the province. It has received much in the way of favourable comment.

In last year's report it was stated that your Committee was planning to devote its interest to the matter of more adequate remuneration for the medical officer of health. It is the present feeling of the Committee that the possible satisfactory solution of this question is complicated by a number of factors, e.g., (1) the amount of time to be devoted; (2) the size and needs of the community; and, (3) the accessibility of those to be served.

The question of the expected salary of the full-time medical officer has

not concerned the Committee; this would appear to be a matter largely dependent on the qualifications of the applicant and the vision of the employing body. If there are municipal authorities who continue to view the need for special qualifications as of little concern, then nothing much can be done to ensure the appointment of only those competent to fulfil the obligations of this essential office; if not, then the "labourer worthy of his hire" knows what such hire should be.

Part-time employment and a satisfactory basis for computing the remuneration for such, are difficult. The suggestion that this should be on a per caput basis is probably acceptable in urban centres. Just what the amount should be will depend on the character of the city, town or village. The alternative would seem to be a fixed sum dependent on the amount of time devoted to the office. The latter plan, while advocated by some, has certain drawbacks, particularly in rural communities with widely scattered population.

The Committee is of the opinion that a general acceptance of what might rightly constitute the obligations of this office is at present the most potent influence on the more adequate payment of the holder of such office. The Committee asks that this report be accepted as a statement of progress and hopes during the coming year to canvass further the possibilities of some acceptable standard of payment for services rendered by the health officer.

J. E. DAVEY, *Chairman*; WARD WOOLNER, J. W. FRASER,
J. T. PHAIR and A. L. MCKAY, *Secretary*.

PLANS, PROGRAMS, AND PROGRESS

Recent Public Health Legislation in Ontario

DURING the past few months two important items have been added to the legislation administered by the Department of Health of Ontario. On March 31st, 1937, certain regulations respecting public hospitals were approved by the Lieutenant-Governor in Council. An amendment to The Pharmacy Act, which came into force on May the 24th, 1937, provides for the control of the sale of certain habit-forming drugs. It is the object of this article to describe briefly the main provisions of these two legislative enactments.

Regulations under The Public Hospitals Act

The former regulations under The Public Hospitals Act dealt with the administrative functions of the hospital and most of these provisions have been included in the new regulations. The new regulations make a distinct departure, however, in dealing with matters pertaining to the medical and nursing staff and the professional work done in public hospitals.

The medical staff must hold a meeting once a month for the discussion of the professional work done in the hospital. A procedure is laid down to cover the situation where a member of the medical staff is unable through illness or absence to perform his hospital duties. A practitioner who sends a patient to a hospital is responsible for notifying the superintendent of any condition which would make such patient dangerous to others.

The section regarding fees contains an enactment against fee-splitting and prohibits charging a fee for attendance upon indigent patients.

With certain exceptions all material removed at operation must be sent to a pathological laboratory.

Orders for treatment must be in writing, or if given by telephone, must be recorded and signed by the person receiving them. A complete case record is to be kept for every patient, and the records may not be removed or inspected except under certain conditions. No surgical operation is to be performed on any patient without consent in writing signed by the patient or his legally qualified representative, except that where delay would endanger the life of the patient the surgeon may dispense with such consent. The case record must be completed before operation except in case of emergency. The reporting surgeon must file a written description of the operation and the anaesthetist must furnish a record of the anaesthetic. Two legally qualified practitioners must sign a recommendation before an operation is performed.

There is provision for the isolation and nursing care of maternity patients having puerperal sepsis or puerperal fever. Similar provision is made for the isolation of patients suffering from communicable disease. Two or more members of the active staff must hold a consultation on every indigent patient remaining in the hospital for more than thirty days.

A hospital must supply a sufficient number of registered nurses so that at least one registered nurse shall be on duty at all times.

The Pharmacy Act

The Pharmacy Act has been amended to provide for the control of the sale of codeine, amidopyrine and barbituric acid compounds. A schedule is added to The Pharmacy Act and the Lieutenant-Governor in Council may amend the schedule by Order-in-Council. When a drug is added to this schedule then it may not be sold by retail except on a prescription for every sale signed by a legally qualified medical practitioner, dentist, or veterinary surgeon. The schedule at present contains only three drugs, codeine and

its salts except under certain conditions; amidopyrine and barbituric acid and derivatives or combinations of either of them with other substances. A procedure is laid down in the Act for the discipline of any medical practitioner, dentist, veterinary surgeon or pharmaceutical chemist who sells or prescribes an excessive, unreasonable or improper amount of any of the drugs listed in the schedule.—*K. G. Gray, M.D., Solicitor, Department of Health of Ontario.*

Lipoid Pneumonia

The term lipoid pneumonia has been applied in recent clinical articles to cases of pneumonia, particularly in infants and young children, which have been caused apparently by the aspiration of oily preparations into the lungs, following the application of such preparations to the nasal passages. The condition has been observed usually in children under two years of age and especially in artificially fed, poorly nourished infants and in those with any difficulty in swallowing or breathing. Patients show the clinical signs and symptoms of a low-grade pneumonia and at autopsy the lungs show the reaction of the tissues to a foreign body and the results of a secondary invasion by bacteria. The condition can also be brought about by administration of cod liver oil by mouth where a child is resistant to its administration or in the instance of very feeble infants.

Attention has been drawn to this subject by Dr. Charles F. Bolduan, Director of the Bureau of Health Education, Department of Health, New York City. The opinions of a number of paediatricians in New York City were obtained by him. The Department of Health, therefore, has pointed out that the indiscriminate introduction of oily substances into the nose constitutes a definite menace and warrants an educational campaign against the use of oil in the nasal tract of infants. Warning also was issued that oil medication by way of the nose or mouth should not be permitted in individuals who are unable to swallow properly, whether infants, children, or adults.

Health Insurance Plebiscite in British Columbia

With the return of Premier T. D. Pattullo's government, it is anticipated that the government will give early attention to the development of health insurance. In answer to the plebiscite: "Are you in favour of a comprehensive health insurance plan progressively applied?", a substantial majority of the electors replied in the affirmative. The city of Victoria and the adjacent area of Saanich gave majorities against the measure but large majorities in favour of it were recorded in Greater Vancouver and in other sections of the province. It may be presumed, therefore, that the measure will be introduced in new form at the first session of the legislature in the autumn and will follow the main lines of the original bill in so far as making the insurance contributory and compulsory.

Ontario Plans Sanatorium for Mental Patients with Tuberculosis

The Ontario Government has completed plans for the erection of a $1,500,000 sanatorium at Brampton for mental patients with tuberculosis. An option has been taken on 300 acres of land and tenders will be called for by the 1st of August. All mental patients suffering from tuberculosis will be transferred to the new institution, which will be the first of its kind in Canada and one of the most modern sanatoria on this continent. Construction of the buildings will be in accordance with the recommendations made in the report on hospitals which was compiled for the government last year. Accommodation will be provided for 500 patients. There will be four units, comprising two dormitories, two for men and two for women; an administrative building, and a dining hall.

BOOKS AND REPORTS

Principles and Practice of Preventive Medicine. *Edited by C. W. Hutt, M.A., M.D., M.R.C.P., D.P.H., and H. Hyslop Thomson, M.D., D.P.H. Published by Methuen & Co. Ltd., 36 Essex Street, London, W.C.2, England, 1935. Two volumes. 1688 pages, including 215 illustrations and diagrams. £3 13s. 6d. net.*

IN TWO VOLUMES entitled "The Principles and Practice of Preventive Medicine" is made available a comprehensive review of all phases of modern public health interest. Much was expected of these two volumes largely because the writings of English public health workers are characteristically thorough and authoritative. As a source of information for either the student or the field worker in public health, the work has special merit. Edited by the late Dr. C. W. Hutt, formerly medical officer of health for the Metropolitan Borough of Holborn, and Dr. Hyslop Thomson, medical officer of health for the County of Hertford, the two volumes are the work of many authors, each contributing subject matter in his own specialized field. As a result, while the style of presentation varies from section to section, the whole text is remarkably complete and up to date. Indeed, progress has been so rapid during the last century that it is no longer possible for one or two men to prepare a satisfactory text book in public health.

In these books a number of subjects not usually treated are included, such, for example, as electricity and radiology, hospitals, town planning, etc. The section on meteorology and housing will be of value to the student and the chapter contributed on heredity, while rather short, does serve to emphasize this phase of public health interest in disease. Infant and maternal hygiene, and child hygiene find a prominent place in the text.

Most books whose purpose is similar to this one contain a section on vital statistics but few of them present in the small space available as satisfactory an introduction to this subject as is rendered by Dr. Percy Stocks in volume II of this work. It is impossible, of course, to give more than a brief glimpse of the possibilities of this subject in the space of fifty pages but this section has particular merit in that it has provided practical illustrations of methods.

The tremendous strides made in preventive medicine and hygiene since the opening of the century have resulted in many text books written by authorities in the field rapidly becoming outdated. Not only that, but today the production of a worth while treatise on a subject which hopes to present even a brief review of its many aspects requires close co-operation of experts in the various sections of public health work. These volumes on the principles and practice of preventive medicine illustrate what can be accomplished in such a fashion and undoubtedly teachers and students alike will find them a particularly valuable source of up-to-date information in all public health fields. Throughout the text, references on all phases of the subject matter are provided and additional material for further reading is listed at the end of a number of the sections.

A. Hardisty Sellers

The Quintuplets' First Year. *Louise de Kiriline. Published by the Macmillan Company of Canada, 70 Bond Street, Toronto, 1937. 221 pages. $1.50.*

THE SUBJECT matter of this book is accurately described in the sub-title, "The Survival of the Famous Five Dionne Babies and its Significance for all Mothers." After an admirable introduction to the whole subject of maternity, the author faithfully describes to the minutest detail the care given to the babies. In characteristic manner she explains the scientific

basis for each procedure and sets forth the significance of such knowledge to all mothers. The few illnesses suffered by the babies are described. The treatment ordered by the physician and carried out by the nurses is explained. The careful search for the cause of the upset and the immediate steps to correct the conditions provides a valuable lesson regarding the commonsense application of scientific knowledge.

Mme. de Kiriline through her book has given an admirable service to all babies in sharing with the public in general and mothers in particular the lessons so well demonstrated in the care of the quintuplets during their first year.

Edna L. Moore

Milk and Nutrition. *Part I. The Effect of Commercial Pasteurization on the Nutritive Value of Milk, as Determined by Laboratory Experiment. From the National Institute for Research in Dairying and the Rowett Research Institute. Printed by Poynder and Son, Reading, 1937. Purchased from the National Institute for Research in Dairying, Shinfield, Reading, England. 67 pages. 2/6 net.*

THE MILK Nutrition Committee of Great Britain had planned a series of animal and chemical experiments on raw and pasteurized milk to be carried out in duplicate by the above two institutes. This report deals with one experiment on the utilization of calcium and phosphorus carried out as planned and with other work done at Reading. All the investigations were done in a carefully controlled manner and the results are of public health value. In feeding tests on rats, pasteurized milk, prepared commercially by the holder process, gave as good utilization of calcium, phosphorus and protein as did raw milk. Pasteurization causes some loss in the vitamin B complex and in vitamin C, the latter loss being mainly due to exposure of the milk to light prior to pasteurization. The total nutritive value of pasteurized milk for rats is as good as is that of raw milk. Public health officials who may have to deal with prejudices against pasteurization would do well to read this report.

E. W. McHenry

Workers' Nutrition and Social Policy. *International Labour Office (League of Nations) Studies and Reports, Series B (Social and Economic Conditions), No. 23. 249 pages. Geneva, 1936. Available from the League of Nations Society in Canada, 124 Wellington St., Ottawa; 43 St. George St., Toronto; and Sun Life Bldg., Montreal.*

THIS report is concerned with the possibility of changing economic conditions in such a way as to provide workers and their families with adequate nutrition, thus giving them better health and, at the same time, removing a leading cause of unrest. Chapter II deals with standards of adequate nutrition and properly points out how these must be varied for persons of various occupations. In Chapter III are summarized data with regard to food consumption in various countries. In no country can the present level of nutrition be considered adequate, particularly in families with low financial incomes. To supply adequate diets an appreciable increase in food production would be necessary and this is discussed in chapter IV. The remaining four chapters deal with the economic aspects and one is faced with the limitations of purchasing power. This report is well written and gives a practical view of the most important cause of malnutrition. In reading the report the reviewer was reminded of Aykroyd's recent statement that the diets of many people in India could well be supplemented by the use of skimmed milk powder, but that the cost of this is prohibitively high in that country because of a 30 per cent. tariff. It would be of great assistance if this report and others from the League of Nations were read widely.

E. W. McHenry